

EXHIBIT A

PART 2

Using Voice Interaction

Access and run certain menu options and functions using voice commands.

 Availability depends on the specific model.



 The image on your TV may differ from the image above depending on your model and geographical area.

 When you run **Voice Interaction**, the **Voice Interaction** User Guide appears on the screen. This Guide is different for each language supported by **Voice Interaction**.

Setting up Voice Interaction

Turning the TV's verbal response (voice) on/off

 >  **Settings** > **System** > **Expert Settings** > **Voice Interaction** > **Voice Feedback**



Turn **Voice Feedback** on to have the TV respond verbally to your voice commands.


Selecting the voice's gender

 >  **Settings** > **System** > **Expert Settings** > **Voice Interaction** > **Voice Gender**

You can select the gender of the voice that responds to your voice commands.

Running Voice Interaction

Press and hold the  button, say a command, and then release the  button. The TV recognizes the voice command.

 If the command is not recognized, try again with correct pronunciation.

Viewing Broadcast Information at a Glance






See an overview of each channel's program lineup.

Using the guide






 > Live TV > **Guide** [Try Now](#)

In the **Guide**, you can see the daily program schedules for each broadcaster, see program information, choose a program to watch, and set up a schedule viewing or recording.

In the **Guide**, you can see only the TV programs scheduled after the current time.

-  The **Guide** also appears when you press the **CH** button while watching TV.
-  To see information about analog channels and use the analog channel functions of the **Guide**, you must finish the service provider settings in initial setup.
-  To view the **Guide**, you must first set the TV's clock ( >  **Settings** > **System** > **Time** > **Clock**).


After moving to a desired program, press and hold the Select button on the remote control. A pop-up window listing the following functions appears.

- **Scheduled viewing**
After selecting **Schedule Viewing**, you can schedule viewing of a broadcast scheduled program.
 For more information about watching or **Schedule Viewing**, refer to "[Setting Up a Schedule Viewing](#)."
- **Scheduled recording**
After selecting **Schedule Recording**, you can schedule recording of a broadcast scheduled program.
 Recording is not supported in the U.S.A. and Canada.
- **Detailed information**
After selecting **View details**, you can see detailed information about the selected program. The information may differ with the broadcast signal. If information is not provided with the program, nothing appears.
- **Displaying Schedule Manager or Recording & Schedule Manager**
After selecting **Schedule Manager**, you can see the **Schedule Manager** or **Recording & Schedule Manager** screen.
 The actual name may differ by specific geographical area.
- **Recording**
After selecting **Record**, you can record the current broadcasting program.
 Recording is not supported in the U.S.A. and Canada.
 For more information about **Schedule Recording**, refer to "[Recording Programs](#)."

Changing the broadcast signal

 > [Live TV](#) > [Channel List](#)

After pressing the right directional button on your remote control, select **Antenna** to choose **Air** or **Cable**.

 You do not need to use this function if your TV is connected to a cable or satellite box.


Checking digital channel signal info and strength

 >  [Settings](#) > [Support](#) > [Self Diagnosis](#) > [Signal Information](#)

 If your TV is attached to a separate, over-the-air antenna, you can use the signal strength information to adjust the antenna for increased signal strength and improved HD channel reception.


Recording Programs

Record a current or upcoming program using a USB device instead of a video recorder.

The  appears next to the programs and channels scheduled for recording.

 This function is not available in the U.S.A. and Canada.

 Read all precautions before using the recording feature. Refer to "[Before Using the Recording and Timeshift Functions](#)" for more information.

 You can record only the programs that have been received through the antenna.

Recording programs

Using the instant and schedule recording options from the guide screen

- **Instant Recording**

Select a live program from the **Guide**, press and hold the Select button, and then select **Record** to start recording.

- **Schedule Recording**

Select a program scheduled to be broadcast, press and hold the Select button, and then select **Schedule Recording** to set up a schedule recording of the scheduled program.

Using the instant and schedule recording options on the program info window

- **Instant Recording**

Press the Select button while watching a program to display the program info window. Press and hold the Select button, and then select **Record** to record the program.

- **Schedule Recording**

Press the Select button while watching a program to display the program info window. Use the left or right directional button to select a scheduled program. Press and hold the Select button, and then select **Timeshift** to set up a **Schedule Recording** of the scheduled program.

Using schedule recording to record on a specified date and time

 > [Live TV](#) > [Recordings](#) > [Scheduled](#) > [Schedule Recording](#)

Managing the schedule recording list

 > [Live TV](#) > [Recordings](#) > [Scheduled](#) > [Edit](#)

Canceling a schedule recording

 > [Live TV](#) > [Recordings](#) > [Scheduled](#) > [Remove](#)

Viewing recorded programs

 > [Live TV](#) > [Recordings](#) > [Scheduled](#)

Select the file containing the recording from the list. The file is played back.



Buttons that appear may differ depending on the file being played.




For more information about control buttons, refer to "[Buttons and functions available while recording a program or Timeshift.](#)"



Highlight Player is only available if you have saved highlights of a program that was recorded in **Sports Mode**.

Setting Up a Schedule Viewing

Configure the TV to show a specific channel or program at a specific time and date.

The  appears next to programs that have been configured for a schedule viewing.

 To set up a schedule viewing, you must first set the TV's clock ( >  **Settings** > **System** > **Time** > **Clock**).

Setting up a schedule viewing for a channel

Using the schedule viewing options from the guide screen

On the **Guide** screen, select a program you would like to view, press and hold the Select button, and then select **Schedule Viewing** in the pop-up menu that appears.

Using the schedule viewing options on the program info window

Press the Select button while watching TV. The Program Info window appears. Select a program that will be broadcast using the left or right directional buttons. Press and hold the Select button, and then select **Schedule Viewing** to schedule viewing of that program.

Using schedule viewing to view programs at a specified time on a specified date

(U.S.A and Canada)  > **Live TV** > **Schedule Manager** > **Schedule Viewing**

(Other countries)  > **Live TV** > **Recordings** > **Scheduled** > **Schedule Viewing**

Editing a schedule viewing

(U.S.A and Canada)  > **Live TV** > **Schedule Manager** > **Edit**

(Other countries)  > **Live TV** > **Recordings** > **Scheduled** > **Edit**

 You can set up a maximum total of 30 **Schedule Viewing** and **Schedule Recording** entries.

Canceling a schedule viewing




(U.S.A and Canada)  > **Live TV** > **Schedule Manager** > **Remove**


(Other countries)  > **Live TV** > **Recordings** > **Scheduled** > **Remove**


Using Timeshift

Play, pause, or rewind live TV.

You can pause and rewind live TV by using **Timeshift**. Activating this function disables the **Broadcasting** function. [Try Now](#)

-  This function is not available in the U.S.A. and Canada.
-  To use Timeshift, you must connect a USB device for recording.
-  Read all precautions before using the Timeshift function. For more information, refer to "[Before Using the Recording and Timeshift Functions.](#)"

To activate the **Timeshift** function while watching TV, press and hold the Select button, and then select  in the Program Info window.

-  For more information about control buttons, refer to "[Buttons and functions available while recording a program or Timeshift.](#)"



Using the Channel List

Change the channel or check programs on other digital channels.

 > **Live TV** > **Channel List**

By using the **Channel List**, you can change the channel or check programs on other digital channels while watching TV.

The **All Channels** screen contains the following icons:

-  : A favorite channel
-  : The channel that is being watched

If you press the right directional button when viewing the **Channel List** screen, you can use the following functions:

- **All Channels**

Displays the channels that the TV found during the Auto Program channel search.

- **Favorites**

Displays favorites lists 1 to 5.

- **Air or Cable**


Allows you to select **Air** or **Cable** as the DTV mode. **Air** is suitable for homes equipped with separate, over-the-air antennas. **Cable** is suitable for homes that subscribe to a local cable-service or satellite-service provider. You do not need to use this function if your TV is connected to a cable or satellite box.

Editing channels

Edit the channels stored on your TV.

[Home](#) > [Live TV](#) > [Channel List](#) > [All Channels](#) > [Edit](#)

The [All Channels](#) screen contains the following icons:

-  : A favorite channel

Re-registering and deleting a channel

Removing registered channels

To remove a channel, select it, and then select [Delete](#). To remove all channels, select [Select All](#) > [Delete](#).

Adding back removed channels

You can add back removed channels from the [Edit Channel](#) list only. Removed channels are displayed in gray in the [All Channels](#) list. To display the [Edit Channel](#) list, select [Live TV](#) > [Channel List](#) > [All Channels](#) > [Edit](#). Then, to add back a removed channel, select it, and then select [Restore](#). To add back all removed channels, select [Select All](#) > [Restore](#).

Editing registered channels

You can access the following options by selecting [All Channels](#) > [Edit](#):

- Rename channels


Using Program Rating Lock

[Home](#) > [Settings](#) > [Broadcasting](#) > [Program Rating Lock](#) [Try Now](#)

This function is useful for controlling what children watch on TV. [Program Rating Lock](#) does not, however, block programs originating from external sources, such as Blu-ray players, DVD players, or USB files.

Every time you access [Program Rating Lock](#), you must enter the security PIN. You must also enter this PIN to watch a blocked program. The default PIN is 0000. To change the PIN, go to [Home](#) > [Settings](#) > [System](#) > [Expert Settings](#) > [Change PIN](#).

 [Program Rating Lock](#) may not be supported depending on your input signal.

 For more information about the rating system of different countries, refer to "[Blocking programs based on their TV Rating](#)."

Watching blocked / restricted programs

To watch a blocked program, enter the PIN when requested.

When initially showing a restricted program or movie, the screen is blank because the **Program Rating Lock** blocks it. Enter the PIN to unblock the program when a message appears requesting the code.


Creating a Personal Favorites List

Designate frequently watched channels as favorite channels.


Favorite channels are highlighted in the **Edit Channel** and **All Channels** screens with the  symbol.

Registering channels as favorites


 > **Live TV** > **Channel List**

1. Press the right directional button on your remote control.
2. Select **Favorites**.
3. Select one of the five favorites lists.
4. Move to **Edit Favorites**.
5. Select a channel to add in the favorites list.
6. Select . The selected channel is registered in the favorites list.

Viewing and selecting channels on Favorites lists only


 > **Live TV** > **Channel List**

1. Press the right directional button on your remote control.
2. Select **Favorites**.
3. Select the desired list among the five favorites lists on the screen. The channels in the selected favorites list appear.

 Only favorites lists that contain registered channels will display channels.


Editing a Favorites List

Edit a favorites channel list.

 > **Live TV** > **Channel List**

After pressing the right directional button on your remote control, select **Favorites** > **Favorites 1 - Favorites 5** > **Edit**. The **Edit Favorites** screen appears.

Removing channels from a favorites list

Select channels in a favorites list, and then select the  button.

Rearranging a favorites list

Select one or more channels, and then select **Change Order**. The Change Order highlight appears. Press the up/down directional buttons to indicate the new location for the channels. Press the Select button to set the channels into their new location.

Renaming a favorites list

Select the favorites list you want to rename, and then select **Rename Favorites**. Enter a new name using the on-screen keyboard that appears, and then select **Done**.

Making Sports Programs More Realistic with Sports Mode

Make sporting events appear and sound more realistic as if you are actually there.

 >  **Settings** > **Picture** > **Special Viewing Mode** > **Sports Mode** or **Soccer Mode** 

You can use **Sports Mode** to get optimal picture and sound settings for soccer events, making them appear and sound as if you are there. In addition, if a recording device is connected to the TV when you are using **Sports Mode**, you can view highlights extracted from the recorded sporting event automatically or manually.



The actual name of this function may differ by specific geographical area.



Enabling **Sports Mode** changes **Picture Mode** to **Stadium** and **Sound Mode** to **Stadium**, and disables some **Picture** and **Sound** menus.

Extracting highlights automatically

 >  **Settings** > **Picture** > **Special Viewing Mode** > **Soccer Mode** > **Auto Highlights**

Auto Highlights is not available:

- When you are switching the input signal
- When **Video Description** is **On**
- When you are viewing the content saved on a USB storage device

- When the Smart View function is running
- When you are viewing highlights of the current soccer game in the UHD resolution using the **Highlight Player** function
- While watching an analog program



This function is not available in the U.S.A. and Canada.



The performance of **Auto Highlights** depends on the characteristics of the transmitted signal.



It is advisable to use **Auto Highlights** only while watching a soccer game. If you use this function for other sporting events, it may display irrelevant picture frames.

Viewing a game recorded in sports mode

You can view a recorded game saved on a USB storage device.



Recording is not available in the U.S.A. and Canada.



For more information about the functions, refer to "[Buttons and functions available while using sports mode.](#)"



This function is not available on certain models in specific geographical areas.



For more information, refer to "[Viewing recorded programs.](#)"

TV-Viewing Support Functions

Use the functions that are supported by digital or analog channels.

Scanning for available channels

 >  **Settings** > **Broadcasting** > **Auto Program** [Try Now](#)



Do not use this function if your TV is connected to a cable or satellite box.




If the TV has saved channels, **Auto Program** deletes the existing list, and then saves the newly scanned channels.

Configuring advanced broadcasting settings

 >  Settings > Broadcasting > Expert Settings [Try Now](#)

Selecting the broadcast audio language

 >  Settings > Broadcasting > Expert Settings > Audio Options

Audio Options functions differently for analog and digital channels.

Selecting a Language



 >  Settings > Broadcasting > Expert Settings > Audio Options > Preferred Language

This is the language you will hear while watching TV if the language is included in the broadcast signal.

Listening to Multi-Track Sound

 >  Settings > Broadcasting > Expert Settings > Audio Options > Multi-Track Sound

Fine-tuning analog broadcasts

 >  Settings > Broadcasting > Expert Settings > Fine Tune



This function is only available for analog broadcasts.

Adjusting the Picture Quality

Change the Picture Mode and adjust Expert Settings.

Choosing a picture mode

 >  Settings > Picture > Picture Mode 

You can select the **Picture Mode** that provides the best viewing experience.


- **Dynamic**
Makes the picture brighter and clearer in bright viewing environments.
- **Standard**
Is the default mode suitable for general viewing environments.
- **Natural**
Reduces eye strain for a comfortable viewing experience.
- **Movie**
Is suitable for watching TV or movies in a dark room.

Configuring advanced picture settings

 >  Settings > Picture > Expert Settings 

Configure the screen settings to your taste by using the following functions:

- **Backlight**
- **Brightness**
- **Contrast**
- **Sharpness**
- **Color**
- **Tint (G/R)**
- **Apply Picture Settings**
- **Digital Clean View**

 **Auto Visualization** is only available for analog broadcasts.

- **Auto Motion Plus**

 When **LED Clear Motion** is set to **On**, the screen appears darker than when it is **Off**.

- **Film Mode**

 This function is only available when the input signal is TV, AV, Component (480i, 1080i), or HDMI (1080i).


- **Smart LED**


 This function is not available on certain models in specific geographical areas.

- **HDMI UHD Color**


 When you set the HDMI connection to **On**, the TV turns off and then on automatically.

 The HDMI connection with **HDMI UHD Color** set to **Off** supports up to UHD 50P/60P 4:2:0 input signals, while the HDMI connection with **HDMI UHD Color** set to **On** supports up to UHD 50P/60P 4:4:4 and 4:2:2 input signals. For more information, refer to "[Supported Resolutions for UHD Input Signals](#)."

 For the SUHD models, each HDMI connection can be individually optimized for **HDMI UHD Color**. For the UHD models, make sure to connect to the HDMI IN 1 port of the TV.

 When you connect the TV to an external device that supports only the UHD 24 or 30 Hz frequency or any FHD frequency, the HDMI UHD Color function may not be available. In this case, set **HDMI UHD Color** to **Off**.

- **HDMI Black Level**

 This function is only available when the input signal, connected to the TV via an HDMI connector, is set to RGB444.

- **Dynamic Contrast**

- **Color Tone**

 **Cool** and **Standard** are only available when **Picture Mode** is set to **Dynamic**.

 **Color Tone** is only available when the TV is connected to a computer via an HDMI-to-DVI cable.

- **White Balance**

- **Gamma**

- **RGB Only Mode**

- **Color Space**

- **Reset Picture**







Picture Support Functions

Configure the picture settings for your TV.

Viewing a picture-in-picture (PIP)

 >  **Settings** > **Picture** > **PIP**

While viewing video from an external device such as a Blu-ray player on the main screen, you can watch a TV broadcast in a picture-in-picture (PIP) window.

-  This function is not available in the U.S.A. and Canada.
-  This function is not available on certain models in specific geographical areas.
-  PIP is not available while **Smart Hub** is active.
-  Playing a game or using the karaoke function on the main screen can result in lower PIP picture quality.
-  The PIP function is only available under the following conditions: 1) The main screen's source is a Component or HDMI connection. 2) The input resolution is less than FHD (Full HD).
-  The PIP window supports digital channels only and does not support UHD channels.

Viewing a HDR mode

 >  **Settings** > **Picture** > **Expert Settings** > **HDR+ Mode**

Automatically provide an optimal HDR effect based on the video source.

The HDR (High Dynamic Range) technology implements video image that is very similar to the image shown through human eyes by finely adjusting the contrast of the source.


-  This function is only available on certain models in specific geographical areas.


Changing the picture size

 >  Settings > Picture > Picture Size [Try Now](#)



You can change the size of the picture displayed on the TV screen.

- 16:9 Standard
- Custom
- 4:3

 Do not watch your TV in 4:3 mode for extended periods of time. This action can cause the black bars, which appear at the top, bottom, left, and right sides of the screen in 4:3 mode, to "burn in" and appear as temporary or permanent after images on the screen. If the TV is used for commercial or non-normal consumer use, then damage to the screen caused by screen "burn in" is not covered by your Warranty.

 Supported picture sizes differ with the input signal. For more information about supported picture sizes, refer to "[Picture sizes and input signals](#)."

Fitting the picture to the screen

 >  Settings > Picture > Picture Size > Fit to Screen

 The availability of this function depends on the [Picture Size](#).

Adjusting the picture size and/or position

 >  Settings > Picture > Picture Size > Zoom/Position

 The availability of this function depends on the [Picture Size](#).

Adjusting the Sound Quality

Change the Sound Mode and adjust Expert Settings.

Choosing a sound mode

 >  Settings > Sound > Sound Mode [Try Now](#)

You can select a sound mode to optimize your listening experience.

Configuring advanced sound settings

 >  Settings > Sound > Expert Settings [Try Now](#)

You can personalize the sound quality by adjusting the following settings.

- Balance
- Equalizer
- TV Installation Type
- Wireless Speaker Manager



For more information, refer to "[Listening to the TV through Bluetooth devices.](#)"

- HDMI Audio Format
- Audio Format
- Audio Delay
- Auto Volume





If you want to use the volume control of a connected source device to control the sound, deactivate **Auto Volume**. When you use **Auto Volume** with a source device, the device's volume control may not function properly.

- Sound Feedback
- Reset Sound


Using the Sound Support Functions

Configure the sound settings for your TV.

Selecting speakers

 >  **Settings** > **Sound** > **Select Speaker** [Try Now](#)








You can select which speakers the TV uses for audio output.

-  When **Select Speaker** is set so that sound comes from external speakers only, the Volume and Mute buttons and some Sound functions are disabled.


Listening to the TV through Bluetooth devices

 >  **Settings** > **Sound** > **Expert Settings** > **Wireless Speaker Manager** > **Bluetooth Audio Devices**

You can connect Bluetooth audio devices to the TV. They must be paired using the TV's Bluetooth function. For more information on pairing, refer to the Bluetooth audio device's operating manual.

-  This function is not available on certain models in specific geographical areas.
-  If the TV fails to find a Bluetooth audio device, place the device closer to the TV, and then select **Refresh**.
-  When you turn on a paired Bluetooth audio device, the TV detects it automatically, and then displays a pop-up window. Use this pop-up window to activate/deactivate the Bluetooth audio device.
-  The sound quality may be affected by the condition of your wireless network.
-  To connect a Samsung audio device that supports **TV SoundConnect** to the TV, change the mode on the Samsung audio device to **TV SoundConnect**.
-  The devices connected by the **TV SoundConnect** function can be controlled in **Bluetooth Audio Devices**.
-  Before using a Bluetooth audio device, refer to "Read Before Using Bluetooth Devices."

Listening to the TV through a Multiroom speaker

 This function is not available on certain models in specific geographical areas.

Creating surround effect through Multiroom speaker





 >  **Settings** > **Sound** > **Expert Settings** > **Wireless Speaker Manager** > **Multiroom Link Type**

When a multiroom speaker is used, an optimal sound can be output by creating surround effect. You can select any of the configurations with and without sound bar.

Configuring the surround effect settings through Multiroom speaker

 >  **Settings** > **Sound** > **Expert Settings** > **Wireless Speaker Manager** > **Multiroom Link Settings**

You can hear the TV sound after configuration of the surround effect through Multiroom speaker.

-  The Multiroom Link function is only available when at least one Samsung Multiroom Link compatible speaker is connected to the TV.
-  The Multiroom Link function is deactivated when you activate Smart View (Screen Mirroring).
-  The audio from the secondary device(s) may lag behind the audio and video of the main device that is playing the source content.
-  For more information, refer to the Multiroom Link manual on the Samsung web site. (www.samsung.com)


Setting the Time and Using the Timer

Set the current time and use the timer function.

Setting the current time


🏠 > ⚙️ **Settings** > **System** > **Time** [Try Now](#)


You can set the **Clock** manually or automatically. Once the **Clock** is set, you can view the current time on the TV anytime.

 The clock must be reset every time the power is disconnected.

Setting the clock using digital broadcast info

🏠 > ⚙️ **Settings** > **System** > **Time** > **Clock** > **Clock Mode** > **Auto**


 This function works only when the TV's antenna jack is connected to either an antenna or a cable output and is receiving digital broadcasts.

 Depending on the broadcast signal, the displayed time may differ.

 The accuracy of the time information received may differ with the channel and signal.

Changing the current time

🏠 > ⚙️ **Settings** > **System** > **Time** > **Clock** > **Time Offset**

 **Time Offset** adjusts the time through a network connection. This function is only available if **Clock Mode** is set to **Auto** and the TV is connected to the Internet through a local area network.

 **Time Offset** adjusts the time if the TV fails to receive time information through normal digital broadcast signals.

Setting the clock manually

🏠 > ⚙️ **Settings** > **System** > **Time** > **Clock** > **Clock Mode** > **Manual** > **Clock Set**

Using the timers

Using the sleep timer

🏠 > ⚙️ **Settings** > **System** > **Time** > **Sleep Timer**

You can use this function to automatically shut off the TV after a pre-set period of time. You can set the timer in 30 minute increments for up to 3 hours.

Turning on the TV using the on timer

🏠 > ⚙️ **Settings** > **System** > **Time** > **On Timer**

You can set **On Timer** to make the TV turn on automatically at a specific time. **On Timer** is only available when the **Clock** has already been set.

The **On Timer** function lets you select a source for the TV to use when it turns on. If you want to play content saved in a USB device or content from an HDMI or Component source, such as a DVD player, Blue-ray player, or cable/satellite box, connect the device to the TV before you start **On Timer** setup and turn it on. For **On Timer** to function, you must keep the device connected to the TV.

Music and **Photo** options let you specify a USB device folder containing music files in the music field and/or a folder containing photos in the photo field. If you select both a folder that contains music files and a folder that contains photo files, the TV plays the music files and displays the photos at the same time.

- If the folder that you choose has sub-folders, you can select a sub-folder in the same way.
- This function does not work properly if the selected USB device does not contain media files or a folder has not been specified.
- The slideshow will not start if there is only one image file on the USB device.
- Folders with long names cannot be selected.
- Make sure to use different folder names for multiple USB devices.
- Use a USB memory stick or multi-card reader. **On Timer** may not work with certain battery-powered USB devices, MP3 players, or PMPs because the TV may take too long to recognize the device.

Turning off the TV using the off timer

🏠 > ⚙️ **Settings** > **System** > **Time** > **Off Timer**

Using the Screen Burn Protection and Energy Saving Functions

Protect the screen from screen burn-in and reduce the TV's energy consumption.

Preventing screen burn

🏠 > ⚙️ **Settings** > **System** > **Expert Settings** > **Auto Protection Time**

Still images can leave burned-in after-images if left on the screen for a long period of time. To protect the screen, go to **Auto Protection Time**, and then select a time setting from the list. If a still image is shown on the screen for longer than the time that you selected, the TV automatically activates the Screen Burn Protection function.

Reducing the energy consumption of the TV

🏠 > ⚙️ **Settings** > **System** > **Eco Solution** **Try Now**

You can adjust the brightness level of the TV and prevent overheating to reduce overall power consumption.

- **Eco Sensor** **Try Now**
Automatically adjusts the brightness level of the TV, according to the ambient light level, to reduce power consumption. If the **Eco Sensor** has adjusted the screen's brightness level, you can select **Min. Backlight** to manually adjust the minimum screen brightness.
- **Energy Saving Mode** **Try Now**
Allows you to select a brightness setting from the list to reduce the TV's power consumption.
- **Motion Lighting** **Try Now**
Adjusts the brightness in response to on-screen movements to reduce power consumption.
- **Auto Power Off** **Try Now**
Automatically turns off the TV to prevent overheating if there is no operation for the length of time you specify (4, 6, or 8 hours).

Using Anynet+ (HDMI-CEC)

Control the external devices connected via Anynet+ (HDMI-CEC) with the remote control.

You can use the TV's remote control to control external devices that are connected to the TV by an HDMI cable and that support Anynet+ (HDMI-CEC). Note that you can only set up and operate Anynet+ (HDMI-CEC) with the remote control.









Connecting an external device through Anynet+ and using their menus

 >  Settings > System > Expert Settings > Anynet+ (HDMI-CEC)

1. Set Anynet+ (HDMI-CEC) to On.
2. Connect an HDMI-CEC-compliant device to the TV.
3. Turn on the connected external device. The device is automatically connected to the TV. After connection is finished, you can access the menu of the connected device on your TV screen using your TV remote and control the device.

 The connecting process can take up to 2 minutes to complete.

Read before connecting an Anynet+ (HDMI-CEC) device

-  You can configure the TV's Universal Remote to control third-party cable boxes, Blu-ray players, and home theaters that do not support HDMI-CEC. For more information, refer to "[Controlling External Devices with the Samsung Smart Remote - Using the Universal Remote](#)."
-  Anynet+ cannot be used to control external devices that do not support HDMI-CEC.
-  Anynet+ (HDMI-CEC)-enabled devices must be connected to the TV with an HDMI cable. Note that some HDMI cables may not support Anynet+ (HDMI-CEC).
-  The TV remote control may not work under certain circumstances. If this occurs, set up the device as an Anynet+ (HDMI-CEC)-enabled device again.
-  Anynet+ (HDMI-CEC) works only with external devices that support HDMI-CEC and only when those devices are either in standby mode or turned on.
-  Anynet+ (HDMI-CEC) can control up to 12 compliant external devices (up to 3 of the same type) except for home theaters. Anynet+ (HDMI-CEC) can control only one home theater system.
-  To listen to 5.1-channel audio from an external device, connect the device to the TV via an HDMI cable and connect a 5.1 home theater system directly to the external device's digital audio output connector.
-  If an external device has been set up for both Anynet+ and a universal remote control, the device can be controlled only with the universal remote control.

Updating the TV's Software

View your TV's software version and update it if necessary.


 >  Settings > Support > Software Update [Try Now](#)

Updating the TV's software to the latest version

 **DO NOT** turn off the TV's power until the update is complete. The TV will turn off and on automatically after completing the software update. Video and audio settings may be reset to their defaults after a software update.

Updating through the Internet


 >  Settings > Support > Software Update > Update now

 Updating from the Internet requires an active Internet connection.

Updating through the USB device

 >  Settings > Support > Software Update > Update now


After downloading the update file from the website and storing it on a USB device, connect the USB device to the TV for update.

 To update using a USB flash drive, download the update package from Samsung.com to your computer. Then, save the update package in the USB device's top-level folder. Otherwise, the TV will not be able to locate the update package.

Updating the TV automatically

 >  Settings > Support > Software Update > Auto Update

If the TV is connected to the Internet, you can have the TV's software update itself automatically while you are watching the TV. When the background update is completed, it is applied the next time the TV is turned on.

 This function may take a longer time if another network function is running concurrently.

 This function requires an Internet connection.

 If you agree to the Smart Hub terms and conditions, **Auto Update** is set to **On** automatically. If you do not want the TV's software to update itself automatically, set **Auto Update** to **Off**.

Protecting the TV from Hacking and Malicious Code

Protect your TV from hacking attempts and malicious code.

 >  **Settings** > **System** > **Expert Settings** > **Smart Security**


You can use **Smart Security** to protect the TV from hacking and malicious code when it is connected to the Internet.

Checking the TV and connected storage for malicious code

 >  **Settings** > **System** > **Expert Settings** > **Smart Security** > **Scan**

If malicious code is found, the results of the scan will appear on the screen. This result window displays all malicious code found. You can quarantine (isolate) the code. Quarantining prevents it from executing.

1. Select all the malicious code to quarantine.
2. Select **Isolate**. The selected malicious code is relocated to the **Isolated List**.

 The **Isolated List** displays all quarantined malicious codes.

Scanning for viruses in real time

 >  **Settings** > **System** > **Expert Settings** > **Smart Security** > **Real-Time Monitoring**

Viewing scan results

 >  **Settings** > **System** > **Expert Settings** > **Smart Security** > **Monitoring Results**

Using Other Functions

[View other functions.](#)


Running the accessibility functions

[Home](#) > [Settings](#) > [System](#) > [Accessibility](#) [Try Now](#)

Enabling voice guides for the visually impaired

[Home](#) > [Settings](#) > [System](#) > [Accessibility](#) > [Voice Guide](#) [Try Now](#)

You can activate voice guides that describe the menu options aloud to aid the visually impaired. To activate this function, set **Voice Guide** to **On**. With **Voice Guide** on, the TV provides voice guides for channel change, volume adjust, information on current and upcoming programs, schedule viewing, other TV functions, various content in the Web Browser, and in **Search**.

 The **Voice Guide** is provided in the language that is specified on the **Language** screen. However, some languages are not supported by **Voice Guide** even though they are listed in the **Language** screen. **English** is always supported.

Changing the volume, speed, and pitch of the Voice Guide

You can configure the volume, pitch, speed, and level of the **Voice Guide**.

Enabling audio for the video description function



[Home](#) > [Settings](#) > [System](#) > [Accessibility](#) > [Video Description](#)

You can activate an audio guide that provides an audio description of video scenes for the visually impaired. This function is only available with broadcasts that provide this service.

Showing captions

[Home](#) > [Settings](#) > [System](#) > [Accessibility](#) > [Caption](#) > [Caption](#)

Set **Caption** to **On** to watch programs with the captions displayed.

-  Captions are not displayed by programs that do not support captions.
-  The TV cannot control or modify DVD or Blu-ray subtitles. To control DVD or Blu-ray subtitles, use the sub-title feature of the DVD or Blu-ray player and the player's remote control.

Selecting the caption language

[Home](#) > [Settings](#) > [System](#) > [Accessibility](#) > [Caption](#) > [Caption Mode](#)

- **Default / CC1 ~ CC4 / Text1 ~ Text4**
(Analog channels only) Operates in either analog TV channel mode or when a signal is supplied from an external device to the TV. (Depending on the broadcast signal, the analog caption function may or may not work with digital channels.)
- **Default / Service1 ~ Service6 / CC1 ~ CC4 / Text1 ~ Text4**
(Digital channels only) Works with digital channels. **Service1** – **Service6** may not be available in digital caption mode depending on the broadcast.

Setting the digital caption related options

[Home](#) > [Settings](#) > [System](#) > [Accessibility](#) > [Caption](#) > [Digital Caption Options](#)

You can change the font color, background color, and size settings.

-  The foreground and background colors and opacity settings cannot be the same.

Adjusting the menu transparency

[Home](#) > [Settings](#) > [System](#) > [Accessibility](#) > [Settings Menu Transparency](#) [Try Now](#)

You can adjust the menu's transparency.

-  Setting **High Contrast** ([Home](#) > [Settings](#) > [System](#) > [Accessibility](#) > [High Contrast](#)) to **On** automatically switches the menu display mode to opaque. You cannot manually change the **Settings Menu Transparency** settings.

White text on black background (high contrast)

[Home](#) > [Settings](#) > [System](#) > [Accessibility](#) > [High Contrast](#) [Try Now](#)

You can change major service screens to white text on a black background or change the transparent TV menus to opaque so that text can be more easily read. To activate this function, set **High Contrast** to **On**.



Enlarging the font (for the visually impaired)

 >  Settings > System > Accessibility > Enlarge 

You can enlarge the size of the font on the screen. To activate, set **Enlarge** to On.

Learning about the remote control (for the visually impaired)

 >  Settings > System > Accessibility > Learn Remote Control 

This function helps individuals with a visual impairment to learn the positions of the buttons on the remote control. When this function is activated, you can press a button on the remote control and the TV will tell you its name. To return to the previous screen, press the  button twice. To exit, press and hold the  button.

 This function is only available in the U.S.A. and Canada.

Listening to the TV through Bluetooth devices (for the hearing impaired)

 >  Settings > System > Accessibility > Multi-output Audio 

You can turn on both the TV speaker and Bluetooth devices at the same time. When this function is active, you can set the volume of the Bluetooth devices higher than the volume of the TV speaker.

 This function is not available on certain models in specific geographical areas.

 When you connect Bluetooth devices to the TV, the **Multi-output Audio** is activated. For more information about connecting Bluetooth devices to the TV, refer to "[Listening to the TV through Bluetooth devices](#)."

Configuring advanced system settings

 >  Settings > System > Expert Settings 

Changing the menu language

 >  Settings > System > Expert Settings > Language

Setting up a password

🏠 > ⚙️ **Settings** > **System** > **Expert Settings** > **Change PIN**

The PIN input window appears. Enter a PIN. Enter it again to confirm it. The default PIN is 0000.

If you forget your PIN, you can reset it with your remote control. With the TV turned on, press the following buttons on the remote control in the order shown to reset the PIN to 0000: **VOL** → Volume Up → ⏮ → Volume Down → ⏭ → Volume Up → ⏮. On the standard remote control: 🔊 → (+) (Volume Up) → **RETURN** → (–) (Volume Down) → **RETURN** → (+) (Volume Up) → **RETURN**.

Enabling/Disabling the front indicators

🏠 > ⚙️ **Settings** > **System** > **Expert Settings** > **Light Effect**

- ✎ The color of the TV's indicator lights may differ by the model.
- ✎ This function is not available on certain models in specific geographical areas.

Registering the TV as a DivX-certified device (watching for pay DivX movies)

🏠 > ⚙️ **Settings** > **System** > **Expert Settings** > **DivX® Video On Demand**

- ✎ Digital Rights Management (DRM) is a technical security mechanism that protects the content provider's copyright.
- ✎ You can watch recorded movies or free DivX movies without registration.
- ✎ Visit the DivX website (<http://www.divx.com>) and log in to your user account before registering the TV as a DivX-certified device. If you do not have an account, create one.

Checking Notifications

🏠 > ⚙️ **Settings** > **System** > **Expert Settings** > **View Notifications**

You can view the list of event messages generated by the TV. **View Notifications** appears on the screen when events such as an update release for an app or a Samsung Account login/logout occurs.

- ✎ To delete all notifications, select **Delete All**.
- ✎ To check the SMART TV's service notifications in a **WEB BROWSER**, select **Service Notice**.

Locking/Unlocking the TV Controller or Control Stick

🏠 > ⚙️ **Settings** > **System** > **Expert Settings** > **TV Controller Lock** or **Control Stick Lock**

- ✎ The actual name of this function may differ depending on the model.

Using the TV as a display model (for retail stores)

🏠 > ⚙️ **Settings** > **System** > **Expert Settings** > **Usage Mode**

You can turn the TV into a display model for retail environments by setting **Usage Mode** to **Retail Mode**.



For all other uses, select **Home Mode**.



With **Retail Mode**, some functions are disabled, and the TV automatically resets itself after a preset amount of time.

Enabling game mode

🏠 > ⚙️ **Settings** > **Picture** > **Special Viewing Mode** > **Game Mode** [Try Now](#)



The game mode is not available for normal TV viewing.



The screen may shake somewhat.



When **Game Mode** is enabled, **Picture Mode** and **Sound Mode** are switched to **Game** automatically.



To use a different external device, first disconnect the game console and disable **Game Mode**.

Restoring the TV to the factory settings

🏠 > ⚙️ **Settings** > **Support** > **Self Diagnosis** > **Reset**

You can restore all TV settings (excluding the Internet and network settings) to the factory defaults.

1. Select **Reset**. The security PIN entry window appears.
2. Enter the security PIN, and then select **Yes**. All settings are then reset. The TV turns off and on again automatically and displays the **Setup** screen.



For more information on **Setup**, refer to the user manual that came with the TV.

Getting Support

Get help directly from Samsung if you have a problem with your TV.

Getting support through Remote Management

 >  Settings > Support > Remote Management [Try Now](#)

To let Samsung Electronics diagnose your TV remotely when you need assistance with your TV, set **Remote Management** to **On**. You will need to read and agree to the service agreement before using this feature.



This function requires an Internet connection.

What is Remote Support?

Samsung Remote Support service offers you one-on-one support with a Samsung Technician who can remotely:

- Diagnose your TV
- Adjust the TV settings for you
- Perform a factory reset your TV
- Install recommended firmware updates

How does Remote Support Work?

You can easily have a Samsung Tech service your TV remotely:

1. Call the Samsung Contact Center and ask for remote support.
2. Open the menu on your TV and go to the **Support** section.
3. Select **Remote Management**, then read and agree to the service agreements. When the PIN screen appears, provide the PIN number to the agent.
4. The agent will then access your TV.

Finding the contact information for service

 >  Settings > Support > Contact Samsung [Try Now](#)


You can view the address of the Samsung website, the call center phone number, your TV's model number, your TV's software version, the Smart Hub info, and other information you may need to get service support from a Samsung call agent or the Samsung website.




You can also find information by reading the QR code of the product.

Requesting service

[Home](#) > [Settings](#) > [Support](#) > [Request Support](#) [Try Now](#)

 This function is not available in specific geographical areas.

You can request service when you encounter a problem with the TV. Select the item matching the problem that you encountered, and then select [Request Now](#) or [Schedule Appointment](#) > [Send](#). Your service request will be registered.

 You should agree to the terms and conditions for the service request.

Diagnosing TV operational issues

You can diagnose issues with your TV and Smart Hub and run reset functions.

[Home](#) > [Settings](#) > [Support](#) > [Self Diagnosis](#) [Try Now](#)

You can use the [Picture Test](#) to help diagnose video issues and the [Sound Test](#) to diagnose sound issues. You can also view signal strength information for over-the-air digital signals, test the Smart Hub Internet connection, and run the Smart Hub and TV factory reset functions.

There Is a Problem with the Picture

When the TV has trouble with the picture, these steps may help resolve the problem.

Testing the picture




[Home](#) > [Settings](#) > [Support](#) > [Self Diagnosis](#) > [Start Picture Test](#)

Before you review the list of problems and solutions below, use [Start Picture Test](#) to determine if the problem is caused by the TV. [Start Picture Test](#) displays a high definition picture you can examine for flaws or faults.

The problem	Try this!
Flickering and Dimming	If your Samsung Television is flickering or dimming sporadically, you may need to disable some of the energy efficiency features. Disable Energy Saving Mode (Home > Settings > System > Eco Solution > Energy Saving Mode), Eco Sensor (Home > Settings > System > Eco Solution > Eco Sensor), or Motion Lighting (Home > Settings > System > Eco Solution > Motion Lighting).
Component Connections/Screen Color	<p>If the color on your Samsung television screen is not correct or the black and white colors are off, run Start Picture Test (Home > Settings > Support > Self Diagnosis > Start Picture Test).</p> <p>If the test results indicate that the problem is not caused by the TV, do the following:</p> <ul style="list-style-type: none"> • Confirm that the video input connectors are connected to the correct external device video output connectors. • Check the other connections as well. If the TV is connected to an external device via a component cable, confirm that the Pb, Pr, and Y jacks are plugged into their proper connectors.

The problem	Try this!
Screen Brightness	<p>If the colors on your Samsung TV are correct but just a little too dark or bright, try adjusting the following settings first.</p> <ul style="list-style-type: none"> Select Home > Settings > Picture > Expert Settings and adjust the Backlight, Contrast, Brightness, Sharpness, Color, or Tint (G/R) settings.
Ghosting, Blurring, or Juddering	<p>If you notice ghosting or blurring on the screen, use the Auto Motion Plus function (Home > Settings > Picture > Expert Settings > Auto Motion Plus) to resolve the issue.</p>
Unwanted Powering Off	<p>If your Samsung TV appears to turn off by itself, try disabling some of the TV's energy efficiency functions. See if Sleep Timer (Home > Settings > System > Time > Sleep Timer) has been enabled. The Sleep Timer automatically turns the TV off after a specified period of time. If the Sleep Timer has not been enabled, see if Auto Power Off (Home > Settings > System > Eco Solution > Auto Power Off) has been enabled and disable it.</p>
Problems Powering On	<p>If you are having problems powering on your Samsung television, there are a number of things to check before calling the service department. Confirm that the TV's power cord is connected correctly at both ends and that the remote control is operating normally. Make sure that the antenna cable or cable TV cable is firmly connected. If you have a cable or satellite box, confirm that it is plugged in and turned on.</p>
Unable to find a Channel	<p>If your TV is not connected to a cable or satellite box, run Auto Program (Home > Settings > Broadcasting > Auto Program).</p>
The TV image does not look as good as it did in the store.	<p>Store displays are all tuned to digital, HD (high definition) channels.</p> <p>If you have an analog cable or satellite box, upgrade to a digital cable or satellite box. Use HDMI or Component cables to deliver HD (high definition) picture quality.</p> <p>Many HD channels are upscaled from SD (Standard Definition) content. Look for a channel that is broadcasting HD content.</p> <ul style="list-style-type: none"> Cable/Satellite Subscribers: Try HD channels from the channel lineup. Air/Cable Antenna Connection: Try HD channels after running the Auto Program function. <p>Adjust the cable or satellite box's video output resolution to 1080i or 720p.</p>
The picture is distorted.	<p>The compression of video content may cause picture distortions, especially in fast moving pictures from sports programs and action movies.</p> <p>If the signal reception is weak or poor, screen distortion may be accompanied but it is not a malfunction.</p> <p>Mobile phones used close to the TV (within 3.2 ft) may cause noise in analog and digital channels.</p>
The color is wrong or missing.	<p>If you're using a Component connection, make sure that the Component cables are connected to the correct jacks. Incorrect or loose connections may cause color problems or a blank screen.</p>

The problem	Try this!
The color is poor or the picture is not bright enough.	Go to the Picture and then adjust the Picture Mode , Brightness , Sharpness , and Color settings. See if Energy Saving Mode (🏠 > ⚙️ Settings > System > Eco Solution > Energy Saving Mode) has been enabled. Try resetting the picture. (🏠 > ⚙️ Settings > Picture > Expert Settings > Reset Picture)
There is a dotted line on the edge of the screen.	Change Picture Size to 16:9 Standard .
The picture is black and white.	If you are using AV, analog equipment, disconnect the adapter from the Component (Blue) input jack on the TV and connect it to the AV In (Yellow) input jack.

-  If the test picture does not appear or there is noise or distortion, the TV may have a problem. Contact Samsung's Call Center for assistance.
-  If the test picture is displayed properly, there may be a problem with an external device. Please check the connections.
-  If the problem persists, check the signal strength or refer to the external device's user manual.

I Can't Hear the Sound Clearly

When the TV has difficulties with sound, these steps may help resolve the problem.

Testing the sound

🏠 > ⚙️ **Settings** > **Support** > **Self Diagnosis** > **Start Sound Test**

If the TV plays the **Start Sound Test** melody without distortion, there may be a problem with an external device or the broadcast signal's strength.

The problem	Try this!
There is no sound or the sound is too low at maximum volume.	Check the volume control of the device (cable or satellite box, DVD, Blu-ray, etc.) connected to your TV. Set 🏠 > ⚙️ Settings > Sound > Select Speaker to TV Speaker .
The picture is good but there is no sound.	If you are using an external device, check the device's audio output option. (For example, you may need to change your cable box's audio option to HDMI if the box connected to your TV is using an HDMI cable.) To listen to computer sound, connect an external speaker to the computer's audio output connector. If your TV has a headphone jack, make sure there is nothing plugged into it. Reboot the connected device by disconnecting and then reconnecting the device's power cable.

The problem	Try this!
The speakers are making an odd sound.	<p>Make sure that the audio cable is connected to the correct audio output connector on the external device.</p> <p>For antenna or cable connections, check the signal information. A low signal level may cause sound distortions.</p> <p>Run Start Sound Test (🏠) > ⚙️ Settings > Support > Self Diagnosis > Start Sound Test).</p>

There Is a Problem with the Broadcast

When the TV has difficulties receiving broadcasts, these steps may help resolve the problem.

The problem	Try this!
"Weak or No Signal" displayed in TV mode/ cannot find channel.	<p>Select (🏠) > Source to confirm that the correct input source has been selected.</p> <p>If the TV is not connected to a cable or satellite box, run Auto Program to search for channels (🏠) > ⚙️ Settings > Broadcasting > Auto Program).</p>
The TV is not receiving all channels.	<p>Confirm that the coaxial cable is securely connected to the TV.</p> <p>Run Start Setup (🏠) > ⚙️ Settings > System > Start Setup) or Auto Program (🏠) > ⚙️ Settings > Broadcasting > Auto Program).</p>
There are no captions with digital channels.	<p>Go to Caption (🏠) > ⚙️ Settings > System > Accessibility > Caption) and change the Caption Mode.</p> <p>Some channels may not have caption data.</p>
The picture is distorted.	<p>The compression of the video content may cause picture distortions. This is especially true with fast moving pictures from sports programs and action movies.</p> <p>A weak signal can cause picture distortions. This is not a problem with the TV.</p>
The picture quality is low.	Select high definition (HD) channels or programs.

My Computer Won't Connect

When the TV has difficulties connecting to a PC, these steps may help resolve the problem.

The problem	Try this!
The "Mode Not Supported" message appears.	Set your PC's output resolution so it matches a resolution supported by the TV.
The video is OK but there is no audio.	<p>If you are using an HDMI connection, check the audio output setting on your PC.</p> <p>If you are using an HDMI-to-DVI cable, a separate audio cable is required. Note that the HDMI-to-DVI connection is only supported by the HDMI (DVI) port and does not transmit audio. To listen to the computer sound, connect external speakers to the audio output connection of the computer.</p>

The TV Won't Connect to the Internet

When the TV has difficulties connecting to the Internet, these steps may help resolve the problem.

The problem	Try this!
The TV cannot connect to your network or apps (for Internet compatible models only).	<p>Make sure the TV has a network connection (Home > Settings > Network > Network Status).</p> <p>Contact your Internet service provider.</p>
The wireless network connection failed.	Confirm your wireless modem/router is on and connected to the Internet.
The wireless network signal is too weak.	<p>Position your wireless router, modem router, or access point in a central location. Avoid putting it in a corner.</p> <p>Use a wireless repeater to get an instant boost in your wireless signal strength. Place the repeater halfway between your wireless router and your TV.</p> <p>The most common wireless technology, 802.11g (wireless-G), operates at a frequency of 2.4 GHz. This frequency is widely used by many cordless phones, microwave ovens, baby monitors, garage doors, and other wireless devices. Reduce interference by not using or turning off wireless devices that use the 2.4 GHz frequency. Instead, use devices that communicate via the 5.0 GHz frequency.</p>
The software update over the Internet has failed.	<p>Check the network connection status (Home > Settings > Network > Network Status).</p> <p>If the TV is not connected to a network, connect it to a network.</p> <p>The upgrade stops if you already have the latest software version.</p>

The Schedule Recording/Timeshift Function Isn't Working

When Timeshift or Schedule recording aren't working, these steps may help resolve the problem.



This function is not available in the U.S.A. and Canada.

The problem	Try this!
Schedule Recording cannot be used.	<p>Check if there is a USB device connected to the TV.</p> <p>Recording will automatically stop if the signal becomes too weak. The Timeshift function will not work if there isn't enough storage space on the USB device.</p>

Anynet+ (HDMI-CEC) Isn't Working

When Anynet+ (HDMI-CEC) isn't working, these steps may help resolve the problem.

The problem	Try this!
Anynet+ does not work.	<p>Confirm that the device is an Anynet+ device. The Anynet+ system supports Anynet+ devices only.</p> <p>Check if the power cord of the Anynet+ device is properly connected.</p> <p>Check the cable connections of the Anynet+ device.</p> <p>Go to Anynet+ (HDMI-CEC) (🏠) > ⚙️ Settings > System > Expert Settings > Anynet+ (HDMI-CEC) and see if Anynet+ (HDMI-CEC) has been set to On.</p> <p>Check whether the TV remote control is in TV mode.</p> <p>Check whether the remote control is Anynet+ compatible.</p> <p>Anynet+ may not function when some other functions are active, including Channel Search, Smart Hub, Initial Setup, etc.</p> <p>If you have disconnected and then reconnected the HDMI cable, scan for devices again or turn your TV off and on.</p>
I want to start Anynet+.	<p>Check if the Anynet+ device is properly connected to the TV, and then select the Anynet+ (HDMI-CEC) (🏠) > ⚙️ Settings > System > Expert Settings > Anynet+ (HDMI-CEC) menu to see if Anynet+ (HDMI-CEC) is set to On.</p>
I want to exit Anynet+.	<p>Set Anynet+ (HDMI-CEC) (🏠) > ⚙️ Settings > System > Expert Settings > Anynet+ (HDMI-CEC) to Off.</p>
The message "Connecting to Anynet+ device..." or "Disconnecting from Anynet+ device" appears on the screen.	<p>You cannot use the remote control when the TV is configuring Anynet+ or switching to a viewing mode. Use the remote control after the TV has completed the Anynet+ configuration or has switched to a viewing mode.</p>
The Anynet+ device won't play.	<p>You cannot use the play function when Start Setup is in progress.</p>

The problem	Try this!
The connected device is not displayed.	<p>Check whether the device supports Anynet+.</p> <p>Check whether the HDMI cable is properly connected.</p> <p>Go to Anynet+ (HDMI-CEC) (🏠 > ⚙️ Settings > System > Expert Settings > Anynet+ (HDMI-CEC)) and see if Anynet+ (HDMI-CEC) has been set to On.</p> <p>Scan for Anynet+ devices again.</p> <p>Anynet+ devices must be connected to the TV using an HDMI cable. Make sure the device is connected to your TV with an HDMI cable. Some HDMI cables may not support Anynet+.</p> <p>If the connection is terminated because there has been a power failure or the HDMI cable has been disconnected, please scan for the device again.</p>
The TV audio is not being played through the receiver.	<p>Connect an optical cable to the TV and the receiver.</p> <p>ARC enables the TV to output digital sound via the HDMI (ARC) port.</p> <p>However, ARC is only available when the TV is connected to an audio receiver that supports ARC.</p>

I Have Trouble Launching/Using Apps

When apps aren't working, these steps may help resolve the problem.

The problem	Try this!
I launched an app, but it's in English. How can I change the language?	<p>Languages supported by the app may be different from the user interface language.</p> <p>The ability to change the language depends on the service provider.</p>
My application is not working.	<p>Check with the service provider.</p> <p>Refer to the Help section on the application service provider's website.</p>

My File Won't Play

When files aren't playing, this may help resolve the problem.

The problem	Try this!
Some files can't be played.	<p>This problem may occur with high-bitrate files. Most files can be played back, but you might experience problems with high-bitrate files.</p>

I Want to Reset the TV

Initialize the settings to factory defaults.

Reset	Path	Description
Reset Settings	Home > Settings > Support > Self Diagnosis > Reset	Resets Picture , Sound , Broadcasting , and all other settings, except for the network settings, to the default settings.
Reset Smart Hub	Home > Settings > Support > Self Diagnosis > Reset Smart Hub	Resets all Smart Hub settings to their factory defaults and deletes all information related to Samsung accounts, linked service accounts, Smart Hub service agreements, and Smart Hub applications.

Other Issues

Use these procedures to resolve other issues that may occur.

The problem	Try this!
The TV is hot.	Watching TV for an extended period of time causes the panel to generate heat. The heat from the panel is dissipated through internal vents running along the top of the TV. The bottom, however, may feel hot to the touch after extended use. Children watching TV need constant adult supervision to prevent them from touching the TV. This heat, however, is not a defect and does not affect the TV's functionality.
The picture won't display in full screen.	HD channels will have black bars on either side of the screen when displaying upscaled SD (4:3) content. Black bars will appear at the top and bottom of the screen when you watch movies that have aspect ratios different from your TV. Adjust the picture size options on your external device or set the TV to full screen.
The "Mode Not Supported" message appears.	The output resolution of the attached device is not supported by the TV. Check the TV's supported resolutions and adjust the external device's output resolution accordingly.
The Captions item in the TV is grayed out.	When an external device is connected with an HDMI or Component cable, the Caption is unavailable. Adjust the caption setting on the external device.
The TV smells of plastic.	This smell is normal and will dissipate over time.
The Signal Information under Self Diagnosis isn't activated.	Verify that the current channel is a digital channel. Signal Information is only available for digital channels.
The TV is tilted to the side.	Remove the base stand from the TV and reassemble it.
The stand is wobbly or crooked.	Make sure the indicator arrows on the stand and stand holder are properly aligned.


The problem	Try this!
The remote control and/or voice control does not work.	The TV ships with protective stickers covering some of the sensors. Make sure all of the stickers have been removed.
The Broadcasting has been deactivated.	<p>Broadcasting is only available when the Source is set to TV.</p> <p>The Broadcasting cannot be accessed while you watch TV using a cable or satellite box.</p> <p>The Broadcasting cannot be accessed while a recording is in progress or the Timeshift function is running.</p>
The settings are lost after 5 minutes or every time the TV is turned off.	<p>If the Usage Mode is set to Retail Mode, the TV's audio and video settings are automatically reset every 5 minutes.</p> <p>Change the Usage Mode (🏠 > ⚙️ Settings > System > Expert Settings > Usage Mode) to Home Mode.</p>
There is an intermittent loss of audio or video.	<p>Check the cable connections and reconnect them.</p> <p>Loss of audio or video can be caused by using overly rigid or thick cables. Make sure the cables are flexible enough for long term use. If you are mounting the TV to a wall, we recommend using cables with 90-degree connectors.</p>
There are small particles on the TV's bezel.	This is part of the product's design and is not a defect.
The PIP is not available.	<p>PIP is available only when an external device is connected with an HDMI or Component cable. Note that the function is unavailable when the Smart Hub is active or the Sports Mode is On.</p> <p>🔧 This function is not available in the U.S.A. and Canada.</p>
A POP (TV's internal banner ad) appears on the screen.	Change the Usage Mode (🏠 > ⚙️ Settings > System > Expert Settings > Usage Mode) to Home Mode .
The TV is making a popping noise.	The expansion and contraction of the TV's outer casing may cause a popping noise. This does not indicate a product malfunction. The TV is safe to use.
The TV is making a humming noise.	<p>Your TV utilizes high-speed switching circuits and high levels of electrical current. Depending on the TV's brightness level, the TV may seem slightly noisier than a conventional TV.</p> <p>Your TV has undergone strict quality control procedures that meet our demanding performance and reliability requirements.</p> <p>Some noise coming from the TV is considered normal and is not an acceptable cause for an exchange or refund.</p>

Before Using the Recording and Timeshift Functions

Read these instructions before using **Recording** and **Timeshift**.

Before using the recording and schedule recording functions

 Recording is not supported in the U.S.A. and Canada.

- To set up a Schedule Recording, you must first set the TV's clock. Set the **Clock** (🏠 > ⚙️ **Settings** > **System** > **Time** > **Clock**).
- You can set up a maximum total of 30 **Schedule Viewing** and **Schedule Recording** entries.
- Recordings are DRM-protected and therefore cannot be played back on a computer or on a different TV. In addition, these files cannot be played back on your TV if its video circuit has been replaced.
- A USB hard drive with a speed of 5,400 rpm or above is recommended. However, RAID-type USB hard drives are not supported.
- USB memory sticks are not supported.
- The total recording capacity may differ with the amount of available hard drive space and the recording quality level.
- **Schedule Recording** requires at least 100 MB of free space on the USB storage device. Recording will stop if the available storage space falls below 50MB while recording is in progress.
- If the available storage space falls below 500 MB while both the Schedule Recording and Timeshift functions are in progress, only the recording will stop.
- The maximum recording time is 720 minutes.
- Videos are played according to the TV settings.
- If the input signal is changed while recording is in progress, the screen will go blank until the change is made. In this case, recording will resume, but  will not be available.
- When using the Record or Schedule Recording function, the actual recording may start a second or two later than the specified time.
- If the Schedule Recording function is operating while a recording is being made on an HDMI-CEC external device, the priority is given to the Schedule Recording.
- Connecting a recording device to the TV automatically deletes abnormally saved recorded files.
- If the **Off Timer** or **Auto Power Off** has been set, the TV will override these settings, continue to record, and turn off after the recording has ended.

Before using the timeshift function



Timeshift is not supported in the U.S.A. and Canada.

- A USB hard drive with a speed of 5,400 rpm or above is recommended. However, RAID-type USB hard drives are not supported.
- USB memory sticks or flash drives are not supported.
- The total recording capacity may differ with the amount of available hard drive space and the recording quality level.
- If the available storage space falls below 500 MB while both the Schedule Recording and Timeshift functions are in progress, only the recording will stop.
- The maximum amount of time available for the Timeshift function is 90 minutes.
- The Timeshift function is not available for locked channels.
- Time-shifted videos are played according to the TV settings.
- The Timeshift function may be terminated automatically once it reaches its maximum capacity.
- The Timeshift function requires at least 1.5 GB of free space available on the USB storage device.

Supported Resolutions for UHD Input Signals

Check the supported resolution for UHD input signals.

- Resolution: 3840 x 2160p, 4096 x 2160p



An HDMI connection with **HDMI UHD Color** set to **Off** supports up to UHD 50P/60P 4:2:0 input signals, while an HDMI connection with **HDMI UHD Color** set to **On** supports up to UHD 50P/60P 4:4:4 and 4:2:2 input signals.

If HDMI UHD Color is set to Off

Frame rate (fps)	Color Depth / Chroma Sampling	RGB 4:4:4	YCbCr 4:4:4	YCbCr 4:2:2	YCbCr 4:2:0
50 / 60	8 bit	-	-	-	0

If HDMI UHD Color is set to On

Frame rate (fps)	Color Depth / Chroma Sampling	RGB 4:4:4	YCbCr 4:4:4	YCbCr 4:2:2	YCbCr 4:2:0
50 / 60	8 bit	0	0	0	0
	10 bit	-	-	0	0
	12 bit	-	-	0	0



For the SUHD models, each HDMI connection can be individually optimized for **HDMI UHD Color**. For the UHD models, make sure to connect to the HDMI IN 1 port of the TV.

Read Before Using Voice Interaction

Read this information before using Voice Interaction.

Precautions for voice interaction

- **Voice Interaction** is not available in all languages, dialects, or regions. Its performance differs with the language chosen, voice volume, and ambient noise levels in the surrounding area.
- Voice Text Input requires that you agree to any third-party app's voice privacy policy.
- You must agree to the following privacy notices before using Interactive **Voice Interaction**:
 - **Voice Interaction** Privacy Notice, Nuance Privacy Notice

Requirements for using voice interaction

- The voice interaction rate differs with the volume/tone, pronunciation, and ambient sound environment (TV sound and ambient noise).
- The optimal volume for voice commands is between 75 dB and 80 dB.

Read Before Using Apps

Read this information before using Apps.

- Due to the product characteristics featured on Samsung Smart Hub, as well as limitations in available content, certain features, applications, and services may not be available on all devices or in all territories. Some Smart Hub features may also require additional peripheral devices or membership fees. Visit <http://www.samsung.com> for more information on specific device information and content availability. Services and content availability are subject to change without prior notice.
- Samsung Electronics takes no legal responsibility whatsoever for any interruption of app services caused by the service provider for any reason.
- Application services may be provided in English only and available content may differ with the geographical area.
- For more information about applications, visit the applicable service provider's website.
- An unstable Internet connection may cause delays or interruptions. In addition, applications may terminate automatically depending on the network environment. If this occurs, check your Internet connection and try again.
- Application services and updates may become unavailable.
- Application content is subject to change by the service provider without prior notice.
- Specific services may differ with the version of the application installed on the TV.
- An application's functionality may change in future versions of the application. If this occurs, run the application's tutorial or visit the service provider's website.
- Depending on the service provider's policies, certain applications may not support multitasking.

Read Before Using the Internet

Read this information before using the **WEB BROWSER**.

- The **WEB BROWSER** is not compatible with Java applications.
- You can download the supported types of files, such as videos, mp3 files, and images, but you cannot download files that are not supported by the TV. If you attempt to download an unsupported file, you will receive an error message instead.
- The web browser may not be able to access certain websites.
- The TV does not support playback of flash videos.
- E-commerce for online purchases is not supported.
- With websites that have scrollable windows, scrolling a window can result in corrupted characters.
- ActiveX is not supported.
- Certain options are not accessible in Link Browsing mode. (Switch to Pointer Browsing to activate those options.)
- Only a limited number of fonts are supported. Certain symbols and characters may not be displayed properly.
- The response to remote commands and the resulting on-screen display may be delayed while a web page is loading.
- Loading a web page may be delayed or suspended completely with certain operating systems.
- The copy and paste operations are not supported.
- When composing an email or a simple message, certain functions such as the font size and color selection may not be available.
- There is a limit to the number of bookmarks and the size of the log file that can be saved.
- The number of windows that can be opened concurrently differs with the search conditions and the TV model.
- The web browsing speed will differ with the network environment.
- Embedded videos in a web page cannot be played at the same time while the PIP (picture-in-picture) function is operating.
- If the **Clock** (🕒) > ⚙️ **Settings** > **System** > **Time** > **Clock** has not been set, the browsing history will not be saved.
- The browsing history is saved from latest to oldest, with the oldest entries being overwritten first.

- Depending on the types of video/audio codecs supported, it might not be possible to play certain video and audio files while playing HTML5 Video/Audio.
- Video sources from PC-optimized streaming service providers may not play properly on our proprietary [WEB BROWSER](#).

Read Before Playing Photo, Video, or Music Files

Read this information before playing media content.

Limitations on use of photo, video, and music files [Try Now](#)

- The TV supports MSC (Mass Storage Class) USB devices only. MSC is a class designation for mass storage devices. Types of MSC devices include external hard drives, flash card readers, and digital cameras. (USB hubs are not supported.) These kinds of devices must be connected directly to the USB port. The TV may not be able to recognize a USB device or read the files on the device if it is connected with a USB extension cable. Do not disconnect USB devices while they are transferring files.
- When connecting an external hard drive, use the USB (HDD) port. We recommend that you use an external hard drive with its own power adapter.
- Certain digital cameras and audio devices may not be compatible with the TV.
- If there are multiple USB devices connected to the TV, the TV might not be able to recognize some or all the devices. USB devices that use high-power input should be connect to the USB [5V, 1A] port.
- The TV supports the FAT, exFAT, and NTFS file systems.
- After sorting files in the Folder view mode, the TV can display up to 1,000 files per folder. If the USB device contains more than 8,000 files and folders, however, some files and folders might not be accessible.
- The PTP (Picture Transfer Protocol) connection mode is available only for digital cameras. If you connect a smartphone or tablet to the TV using PTP mode, the TV will not recognize it.
- Certain files, depending on how they are encoded, may not play on the TV.
- Certain files are not supported on all models.

Supported external subtitles

Name	Format
MPEG-4 Timed text	.txt
SAMI	.smi
SubRip	.srt
SubViewer	.sub
Micro DVD	.sub or .txt
SubStation Alpha	.ssa
Advanced SubStation Alpha	.ass
Powerdivx	.psb
SMPTE-TT Text	.xml

Supported internal subtitles

Name	Container
Xsub	AVI
SubStation Alpha	MKV
Advanced SubStation Alpha	MKV
SubRip	MKV
VobSub	MKV
MPEG-4 Timed text	MP4
TTML in smooth streaming	MP4
SMPTE-TT Text	MP4
SMPTE-TT PNG	MP4

Supported image formats and resolutions

File extension	Format	Resolution
*.jpg *.jpeg	JPEG	15360 x 8640
*.png	PNG	4096 x 4096
*.bmp	BMP	4096 x 4096
*.mpo	MPO	15360 x 8640

Supported music formats and codecs

File extension	Format	Codec	Note
*.mp3	MPEG	MPEG1 Audio Layer 3	
*.m4a *.mpa *.aac	MPEG4	AAC	
*.flac	FLAC	FLAC	Supports up to 2 channels
*.ogg	OGG	Vorbis	Supports up to 2 channels
*.wma	WMA	WMA	Supports WMA 10 Pro up to 5.1 channels. WMA lossless audio is not supported. Supports up to the M2 profile.
*.wav	wav	wav	
*.mid *.midi	midi	midi	Supports type 0 and type 1. Seek is not supported. Supports USB device only.
*.ape	ape	ape	
*.aif *.aiff	AIFF	AIFF	
*.m4a	ALAC	ALAC	

Supported video codecs

File format	Container	Video codecs	Resolution	Frame rate (fps)	Bitrate (Mbps)	Audio codecs			
*.avi *.mkv *.asf *.wmv *.mp4 *.mov *.3gp *.vro *.mpg *.mpeg *.ts *.tp *.trp *.mov *.flv *.vob *.svi *.m2ts *.mts *.divx	AVI MKV ASF MP4 3GP MOV FLV VRO VOB PS TS SVAF	H.264 BP/MP/HP	4096 x 2160	4096 x 2160: 30	60	Dolby Digital LPCM ADPCM(IMA, MS) AAC HE-AAC WMA Dolby Digital Plus MPEG(MP3) DTS(Core, LBR) G.711(A-Law, μ-Law)			
		HEVC (H.265 - Main, Main10, Main4:2:2 10)		3840 x 2160: 60	80				
		Motion JPEG	3840 x 2160	30	80				
		MVC	1920x1080	60	20				
		DivX 3.11 / 4 / 5 / 6							
		MPEG4 SP/ASP							
		Window Media Video v9 (VC1)							
		MPEG2							
		MPEG1							
		Microsoft MPEG-4 v1, v2, v3							
		Window Media Video v7 (WMV1), v8 (WMV2)		30					
		H.263 Sorrenson							
		VP6							
		*.webm	WebM	VP8	1920 x 1080		60	20	Vorbis
				VP9	4096 x 2160		4096 x 2160: 60	40	
		*.rmvb	RMVB	RV8/9/10 (RV30/40)	1920x1080		60	20	RealAudio 6

Other restrictions

- Codecs may not function properly if there is a problem with the content.
- Video content does not play or does not play correctly if there is an error in the content or container.
- Sound or video may not work if they have standard bit rates/frame rates above the TV's compatibility ratings.
- If the Index Table is has an error, the Seek (Jump) function will not work.
- When playing video over a network connection, the video may not play smoothly because of data transmission speeds.
- Some USB/digital camera devices may not be compatible with the TV.
- HEVC codec is only available in MKV / MP4 / TS containers.

Video decoders

- H.264 FHD is supported up to Level 4.1. (does not support FMO/ASO/RS)
- H.264 UHD is supported up to Level 5.1.
- HEVC FHD is supported up to Level 4.1, and HEVC UHD is supported up to Level 5.1.
- VC1 AP L4 is not supported.
- All video codecs excluding WMV v7, v8, MSMPEG4 v3, MVC, and VP6:
Below 1280x720: 60 frame max
Above 1280x720: 30 frame max
- GMC 2 or above is not supported.
- Supports SVAFF Top/Bottom, Side by Side, and Left/Right view sequence type (2ES) only.
- Supports BD MVC specs only.

Audio decoders

- Supports WMA 10 Pro up to 5.1 channels. Supports up to the M2 profile. WMA lossless audio is not supported.
- QCELP and AMR NB/WB are not supported.
- Vorbis is supported for up to 5.1 channels.
- Dolby Digital Plus is supported for up to 5.1 channels.
- The DTS LBR codec is only available for MKV / MP4 /TS containers.
- The supported sample rates are 8, 11.025, 12, 16, 22.05, 24, 32, 44.1, and 48 KHz, and differ with the codec.

Read After Installing the TV


Read this information after installing the TV.

Picture sizes and input signals

The **Picture Size** setting is applied to the current source. The applied **Picture Size** will remain in effect whenever you select that source unless you change it.

Input signal	Picture size
Component	16:9 Standard, Custom, 4:3
Digital channel (720p)	16:9 Standard, Custom, 4:3
Digital channel (1080i, 1080p)	16:9 Standard, Custom, 4:3
Digital channel (3840 x 2160p @ 24/30 Hz)	16:9 Standard, Custom
Digital channel (3840 x 2160p @ 50/60 Hz)	16:9 Standard, Custom
Digital channel (4096 x 2160p)	16:9 Standard, Custom
HDMI (720p)	16:9 Standard, Custom, 4:3
HDMI (1080i, 1080p)	16:9 Standard, Custom, 4:3
HDMI (3840 x 2160p)	16:9 Standard, Custom
HDMI (4096 x 2160p)	16:9 Standard, Custom
USB (720p)	16:9 Standard, Custom, 4:3
USB (1080i/p @ 60 Hz)	16:9 Standard, Custom, 4:3
USB (3840 x 2160p @ 24/30 Hz)	16:9 Standard, Custom
USB (3840 x 2160p @ 60 Hz)	16:9 Standard, Custom
USB (4096 x 2160p @ 24/30/60 Hz)	

Installing an anti-theft lock


An anti-theft lock is a physical device that can be used to protect the TV against theft. Look for the lock slot on the back of the TV. The slot has a  icon next to it. To use the lock, wrap the lock cable around an object that is too heavy to carry and then thread it through the TV's lock slot. The lock is sold separately. The method of using an anti-theft lock may differ for each TV model. Refer to the lock's user manual for more information.

 This function is not available on certain models in specific geographical areas.

Read before setting up a wireless Internet connection

Precautions for wireless Internet

- This TV supports the IEEE 802.11 a /b /g /n /ac communication protocols. Samsung recommends using IEEE 802.11n. Video files stored on a device connected to the TV via a Home Network may not play back smoothly.

 IEEE 802.11 ac communication protocol is not available on certain models.

- To use wireless Internet, the TV must be connected to a wireless router or modem. If the wireless router supports DHCP, the TV can use a DHCP or static IP address to connect to the wireless network.
- Select a channel that is not currently in use for the wireless router. If the channel set for the wireless router is currently being used by another device, the result is usually interference and/or a communications failure.
- Most wireless networks have an optional security system. To enable a wireless network's security system, you need to create a password using characters and numbers. This password is then needed to connect to a security-enabled AP.

Wireless security protocols

The TV only supports the following wireless network security protocols. The TV cannot connect to non-certified wireless routers.

- Authentication Modes: WEP, WPAPSK, WPA2PSK
- Encryption Types: WEP, TKIP, AES

In compliance with the newest Wi-Fi certification specifications, Samsung TVs do not support WEP or TKIP security encryption in networks running in the 802.11n mode. If the wireless router supports WPS (Wi-Fi Protected Setup), you can connect the TV to your network using PBC (Push Button Configuration) or a PIN (Personal Identification Number). WPS automatically configures the SSID and WPA key settings.

Read Before Connecting a Computer (Supported Resolutions)

Check the supported resolution for PC input signals.

When you connect your TV to a computer, set the computer's video card to one of the standard resolutions listed in the tables below or on the next page. The TV will automatically adjust to the resolution you choose. Note that the optimal and recommended resolution is 3840 x 2160 at 60 Hz. Choosing a resolution not included in the tables can result in a blank screen or just the power indicator turning on. Refer to the user manual of your graphics card for compatible resolutions.

IBM

Resolution (Dots x lines)	Display format	Horizontal frequency (KHz)	Vertical frequency (Hz)	Clock frequency (MHz)	Polarity (horizontal / vertical)
720 x 400	70 Hz	31.469	70.087	28.322	- / +

MAC

Resolution (Dots x lines)	Display format	Horizontal frequency (KHz)	Vertical frequency (Hz)	Clock frequency (MHz)	Polarity (horizontal / vertical)
640 x 480	67 Hz	35.000	66.667	30.240	- / -
832 x 624	75 Hz	49.726	74.551	57.284	- / -
1152 x 870	75 Hz	68.681	75.062	100.000	- / -

VESA DMT

Resolution (Dots x lines)	Display format	Horizontal frequency (KHz)	Vertical frequency (Hz)	Clock frequency (MHz)	Polarity (horizontal / vertical)
640 x 480	60 Hz	31.469	59.940	25.175	- / -
640 x 480	72 Hz	37.861	72.809	31.500	- / -
640 x 480	75 Hz	37.500	75.000	31.500	- / -
800 x 600	60 Hz	37.879	60.317	40.000	+ / +
800 x 600	72 Hz	48.077	72.188	50.000	+ / +
800 x 600	75 Hz	46.875	75.000	49.500	+ / +
1024 x 768	60 Hz	48.363	60.004	65.000	- / -
1024 x 768	70 Hz	56.476	70.069	75.000	- / -
1024 x 768	75 Hz	60.023	75.029	78.750	+ / +
1152 x 864	75 Hz	67.500	75.000	108.000	+ / +
1280 x 720	60 Hz	45.000	60.000	74.250	+ / +
1280 x 800	60 Hz	49.702	59.810	83.500	- / +
1280 x 1024	60 Hz	63.981	60.020	108.000	+ / +
1280 x 1024	75 Hz	79.976	75.025	135.000	+ / +
1366 x 768	60 Hz	47.712	59.790	85.500	+ / +
1440 x 900	60 Hz	55.935	59.887	106.500	- / +
1600 x 900RB	60 Hz	60.000	60.000	108.000	+ / +
1680 x 1050	60 Hz	65.290	59.954	146.250	- / +
1920 x 1080	60 Hz	67.500	60.000	148.500	+ / +

Supported Resolutions for Video Signals

Check the supported resolution for video signals.

CEA-861

Resolution (Dots x lines)	Display format	Horizontal frequency (KHz)	Vertical frequency (Hz)	Clock frequency (MHz)	Polarity (horizontal / vertical)
720 (1440) x 576i	50 Hz	15.625	50.000	27.000	- / -
720 (1440) x 480i	60 Hz	15.734	59.940	27.000	- / -
720 x 576	50 Hz	31.250	50.000	27.000	- / -
720 x 480	60 Hz	31.469	59.940	27.000	- / -
1280 x 720	50 Hz	37.500	50.000	74.250	+ / +
1280 x 720	60 Hz	45.000	60.000	74.250	+ / +
1920 x 1080i	50 Hz	28.125	50.000	74.250	+ / +
1920 x 1080i	60 Hz	33.750	60.000	74.250	+ / +
1920 x 1080	24 Hz	27.000	24.000	74.250	+ / +
1920 x 1080	25 Hz	28.125	25.000	74.250	+ / +
1920 x 1080	30 Hz	33.750	30.000	74.250	+ / +
1920 x 1080	50 Hz	56.250	50.000	148.500	+ / +
1920 x 1080	60 Hz	67.500	60.000	148.500	+ / +
3840 x 2160	24 Hz	54.000	24.000	297.000	+ / +
3840 x 2160	25 Hz	56.250	25.000	297.000	+ / +
3840 x 2160	30 Hz	67.500	30.000	297.000	+ / +
3840 x 2160	50 Hz	112.500	50.000	594.000	+ / +
3840 x 2160	60 Hz	135.000	60.000	594.000	+ / +
4096 x 2160	24 Hz	54.000	24.000	297.000	+ / +
4096 x 2160	25 Hz	56.250	25.000	297.000	+ / +
4096 x 2160	30 Hz	67.500	30.000	297.000	+ / +
4096 x 2160	50 Hz	112.500	50.000	594.000	+ / +
4096 x 2160	60 Hz	135.000	60.000	594.000	+ / +

Read Before Using Bluetooth Devices

Read this information before using a Bluetooth device.



This function is not available on certain models in specific geographical areas.

Restrictions on using Bluetooth

- You can't use Bluetooth devices and the **Surround** feature simultaneously.
- Compatibility issues may occur, depending on the Bluetooth device. (A Mobile exclusive headphone may not be available, depending on the environment.)
- Lip-sync errors may occur.
- The TV and Bluetooth device may disconnect, depending on the distance between them.
- A Bluetooth device may hum or malfunction:
 - When a part of your body is in contact with the receiving/transmitting system of the Bluetooth device or the TV.
 - When the device is subject to electrical variation from obstructions caused by a wall, corner, or office partitioning.
 - When the device is exposed to electrical interference from same frequency-band devices including medical equipment, microwave ovens, and wireless LANs.
- If the problem persists, try connecting the device using the digital optical port or the HDMI (ARC) port.

Blocking programs based on their TV Rating

Read this information before viewing a blocking program.

To block content, select a rating category to lock. All programs at that level and higher are blocked and require the PIN to watch. To unblock a category, select the lock icon. To unblock all the categories in a row, select the lock under **ALL**.

Categories on the left:

- **TV-Y**: Young children
- **TV-Y7**: Children 7 and over
- **TV-G**: General audience
- **TV-PG**: Parental guidance
- **TV-14**: Viewers 14 and over
- **TV-MA**: Mature audience

Categories on the top:

- **ALL**: Lock all TV ratings.
- **FV**: Fantasy violence
- **V**: Violence
- **S**: Sexual situations
- **L**: Adult Language
- **D**: Sexually Suggestive Dialog

Blocking movies base on their Movie Rating (MPAA)

This rating system applies to all materials with supplied ratings in the U.S.A.

From the MPAA:

"The Motion Picture Association of America (MPAA) has implemented a rating system that provides parents or guardians with advanced information on which films are appropriate for children."

Select a lock beside one of the rating categories to block that category and all higher categories. To unblock a category, select the lock icon.

- **G**: General audience (no restrictions).
- **PG**: Parental guidance suggested.
- **PG-13**: Parents strongly cautioned.
- **R**: Restricted. Children under 17 should be accompanied by an adult.
- **NC-17**: No children under age 17.
- **X**: Adults only.
- **NR**: Not rated.

Blocking programs based on their Canadian English Rating

This rating system applies to all rated material viewed on English-Canadian TV channels.

Select a lock beside one of the rating categories to block that category and all higher categories. To unblock a category, select the lock icon.

- **C**: Programming intended for children under age 8
- **C8+**: Programming generally considered acceptable for children 8 years and over to watch on their own
- **G**: General programming, suitable for all audiences
- **PG**: Parental Guidance
- **14+**: Programming containing themes or content that may not be suitable for viewers under the age of 14
- **18+**: Adult programming

Blocking programs based on their Canadian French Rating

This rating system applies to all rated material viewed on French-Canadian TV channels.

Select a lock beside one of the rating categories to block that category and all higher categories. To unblock a category, select the lock icon.

- **G: General**
- **8 ans+**: Programming acceptable for children 8 years and over to watch on their own
- **13 ans+**: Programming that may not be suitable for children under the age of 13
- **16 ans+**: Programming not suitable for children under the age of 16
- **18 ans+**: Programming restricted to adults

Blocking Programs based on their Downloadable U.S. Rating

This rating system only applies to material originating from US DTV channels.

Parental restriction information is automatically downloaded while you watch DTV channels. This download may take several seconds. If the information is unavailable from the broadcasting station, the **Downloadable U.S. Rating** menu is deactivated.

Parental restriction levels differ with the broadcasting station. The default menu name and the **Downloadable U.S. Rating** name changes depending on the downloaded information.

Even when the on-screen display is set to another language, the **Downloadable U.S. Rating** menu appears only in English.

Select a lock beside one of the rating categories to block that category and all higher categories. To unblock a category, select the lock icon.

Buttons and Functions

Review available media playback, control, and record buttons and descriptions of how they are used.



The available buttons and functions may differ with the content you are viewing or playing.

Buttons and functions available while playing multimedia content





Press the Select button while playing any video, photo or recorded content. The following buttons appear.



The provided buttons or functions may differ with the media content type.

- **Pause / Play or Start**



Pauses or plays the multimedia content. You can use the following functions when the video is paused.

- **Slow Rewind or Slow Forward:** Allows you to play the video slowly (1/8, 1/4, 1/2) backward or forward by selecting the  or  button. To increase the rewind or forward speed in slow mode up to 3 times, select the button repeatedly. To return to normal speed, select the  button or press the  button.

- **Previous / Next**

Displays the previous or the next multimedia content file.

- **Rewind / Fast Forward**

Rewinds or fast forwards the multimedia content. To increase the rewind or fast forward speed up to 3 times faster than normal, select the button repeatedly. To return to normal speed, select the  button or press the  button.

- **Repeat**

Plays the current multimedia content repeatedly or all multimedia content files in the same folder repeatedly.

- **Shuffle**


Plays music files in random order.



- **Picture Off**

Plays multimedia content with the screen off.

- **Rotate left / Rotate right**

Rotates a photo left or right.

- **Zoom**
Zooms a photo in by up to a factor of 4.
- **Screen Fit**
Fits a photo to the screen.
- **Background Music**
During a slideshow, plays or pauses the background music.
- **Options**
 The available options may differ with the model and content.

Function	Description
Slideshow Speed	Sets the slideshow speed.
Slideshow Effect	Applies transition effects to the slide show.
Background Music	Plays background music while the TV displays photos.  The music files must be saved in the same USB device as the photo files.  To pause the background music, select Background Music on the playback screen.
Information	Displays detailed information about the current multimedia content.
Subtitles	Controls video subtitles. Subtitles: Turns the subtitles on or off. Language: Sets the caption language. Sync: Adjusts the synchronization when the video and the subtitles are not synchronized. Reset Sync: Resets the subtitle synchronization adjustment to 0. Size: Changes the font size of the subtitles. Encoding: Displays a list of encoding languages. Allows you to change the encoding language when subtitles are displayed incorrectly. Edge Type: Adjusts a position of texts and subtitles edge. Edge Color: Changes a color of subtitles edge.
Rotate	Rotates the video.
Audio Language	This function is only available if the video supports multi-track sound.

Buttons and functions available while using sports mode

If you press the Select button, the following buttons appear.

- **Zoom**

Pauses the current screen and zooms in any part of the screen by using the Directional pad.



This function is not available when you browse the multimedia content saved on a USB storage device or PIP is active.

- **Record**



This function is only available if the TV supports the recording function.

- **Timeshift**

You can pause and rewind live TV.



For more information about Timeshift, refer to "[Using Timeshift](#)."



This function is only available if the TV supports the recording function.

- **Manual Highlight**

Saves a video from 10 seconds before you press the button to 10 seconds after.



You can set the TV to automatically save highlights without user intervention. Select [Home](#) > [Settings](#) > [Picture](#) > [Special Viewing Mode](#) > [Sports Mode](#), and then set [Auto Highlights](#) to [On](#). For more information about [Auto Highlights](#), refer to "[Extracting highlights automatically](#)."



This function is only available while recording a program.

- **Highlights Player**

Displays the [Highlights Player](#) screen and plays the highlights saved in the recorded file automatically or manually. [Highlights Player](#) is not available when:

- You are switching the input signal
- [Video Description](#) is on



This function is only available while recording a program.

- **Dual Play**

Allows you to watch a current program in a PIP window while watching a recorded program. To exit PIP mode, select again. [Dual Play](#) is not available when:

- You are switching the input signal
- [Video Description](#) is on
- You are viewing a soccer game in the UHD resolution



This function is only available while recording a program.



This button is only available while you are watching a timeshift video.

- **REC Time**



This function is only available if the TV supports the recording function.

- **Stop Recording**



This function is only available if the TV supports the recording function.

Buttons and functions available while recording a program or Timeshift



This function is not available in the U.S.A. and Canada.



The available buttons and functions may differ with the functions.

If you press the Select button, the following buttons appear.

- **REC Time**

- **Record**

Starts instant recording of the current program.

- **Timeshift**

You can pause and rewind live TV.

- **Stop Recording, Stop Timeshift / Go to Live TV**


Using the buttons on the remote control while recording a program or Timeshift



This function is not available in the U.S.A. and Canada.

- **Pause / Play**

You can use the following function when the video is paused. (Note that with the video paused, the TV does not play audio.)

- **Slow Motion:** Press the  button while recording is in pause mode to play the video back at half speed.

- **Rewind / Fast forward**



This function is not available while you are watching a program that is currently being broadcast.

License

Check the license information and trademarks applied in your TV.



DivX Certified® to play DivX® video up to HD 1080p, including premium content.

DivX®, DivX Certified® and associated logos are trademarks of DivX, LLC and are used under license.

This DivX Certified® device has passed rigorous testing to ensure it plays DivX® video.

To play purchased DivX movies, first register your device at vod.divx.com. Find your registration code in the DivX VOD section of your device setup menu.

Covered by one or more of the following U.S. patents:

7,295,673; 7,460,668; 7,515,710; 8,656,183; 8,731,369; RE45,052.



For DTS patents, see <http://patents.dts.com>. Manufactured under license from DTS, Inc. DTS, the Symbol, DTS in combination with the Symbol, DTS Premium Sound|5.1, DTS Digital Surround, DTS Express, and DTS Neo2:5 are registered trademarks or trademarks of DTS, Inc. in the United States and/or other countries.

© DTS, Inc. All Rights Reserved.



Manufactured under license from Dolby Laboratories.

Dolby, Dolby Audio and the double-D symbol are trademarks of Dolby Laboratories.




The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

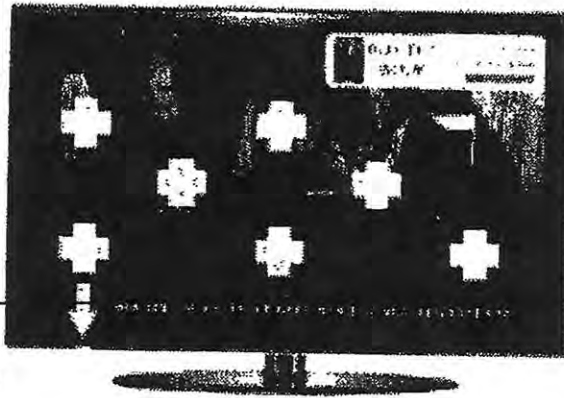
Open Source License Notice

Open Source used in this product can be found on the following webpage. (<http://opensource.samsung.com>) Open Source License Notice is written only English.



 This license may not be supported depending on your country or model.

Engage™ Cognitive ACR Platform



TV CLIENT

samples the screen and sends to server for detection



INGEST SYSTEM

updates fingerprint database with live content & metadata



EVENT SYSTEM

generates web based tagger enabling app delivery to TV "Buy the Anthony Bourdain Book"



ACR CLOUD APP

identifies the content and time code
"Colbert Report" episode #4325, 17 minutes
25 seconds

Cognitive Networks

is infographic is from a white paper prepared for Cognitive Networks.

FEDERAL TRADE COMMISSION
Washington, DC 20580

In the Matter of)
)
Samsung Electronics Co., Ltd.)
)
_____)

Complaint, Request for Investigation, Injunction, and Other Relief

Submitted by

The Electronic Privacy Information Center

I. Introduction

1. This complaint concerns certain business practices of Samsung Electronics, Ltd. that adversely impact consumer privacy in the United States. As set forth in detail below, Samsung routinely intercepts and records the private communications of consumers in their homes. Consumers who have learned of this practices have described it as both “unfair” and “deceptive.” Samsung’s attempts to disclaim its intrusive surveillance activities by means of a “privacy notice” do not diminish the harm to American consumers. It is incumbent upon the Federal Trade Commission to take action in this matter, and to enjoin Samsung and other companies that engage in similar practices, from such unlawful activities.

II. Parties

2. The Electronic Privacy Information Center (“EPIC”) is a public interest research center located in Washington, D.C. EPIC focuses on emerging privacy and civil liberties issues and is a leading consumer advocate before the FTC. EPIC has a particular interest in protecting consumer privacy, and has played a leading role in developing the authority of the FTC to address emerging privacy issues and to safeguard the privacy rights of consumers.¹ In 2013 EPIC filed an FTC complaint against Samsung’s mobile app for Jay-Z’s new album “Magna Carta Holy Grail”

¹ See, e.g., Letter from EPIC Exec. Dir. Marc Rotenberg to FTC Comm’r Christine Varney (Dec. 14, 1995) (urging the FTC to investigate the misuse of personal information by the direct marketing industry), http://epic.org/privacy/internet/ftc/ftc_letter.html; DoubleClick, Inc., FTC File No. 071-0170 (2000) (Complaint and Request for Injunction, Request for Investigation and for Other Relief), http://epic.org/privacy/internet/ftc/DCLK_complaint.pdf; Microsoft Corporation, FTC File No. 012 3240 (2002) (Complaint and Request for Injunction, Request for Investigation and for Other Relief), http://epic.org/privacy/consumer/MS_complaint.pdf; Choicepoint, Inc., FTC File No. 052-3069 (2004) (Request for Investigation and for Other Relief), <http://epic.org/privacy/choicepoint/fcraltr12.16.04.html>.

for using unnecessarily invasive software that “deprived users of meaningful choice regarding the collection of their data.”² EPIC’s complaint concerning Google Buzz provided the basis for the Commission’s investigation and subsequent settlement concerning the social networking service.³ The Commission’s settlement with Facebook also followed from a Complaint filed by EPIC and a coalition of consumer privacy organizations.⁴ EPIC has previously urged the Commission to investigate businesses that make misleading representations as to record destruction practices. EPIC’s complaint against several purveyors of stalker spyware led to a permanent injunction banning the further distribution of the malicious computer software.⁵ Following EPIC’s complaint, the FTC successfully petitioned a federal court for a permanent injunction barring sales of CyberSpy’s “stalker spyware,” over-the-counter surveillance technology allowing individuals to spy on other individuals.⁶ EPIC also previously notified the Commission that AskEraser falsely represented that search queries would be deleted when in fact they were retained by the company and made available to law enforcement agencies.⁷

3. Samsung Electronics Co., Ltd., is a Republic of Korea limited company with its principal place of business in 250, 2-gaepyeong-ro, Jung-gu, Seoul 100-742, Korea. Samsung Electronics America, Inc. is a subsidiary of Samsung Electronics Co., Ltd., located at 105 Challenger Road Ridgefield Park, N.J. 07660.⁸ Dozens of affiliates and subsidiaries operate under the Samsung brand, including Samsung Electronics, one of the largest electronics manufacturers in the world. One of Samsung Electronics’ most successful enterprises has been its manufacture of

² In re Samsung, (2013) (EPIC Complaint, Request for Investigation, Injunction, and Other Relief), <https://epic.org/ftc/EPICsamsungcomplaintFINAL.pdf>. See also, EPIC: Samsung ‘Jay-Z Magna Carta’ App, https://epic.org/samsung_jay-z_magna_carta_app.html (last visited Feb. 11,

³ Press Release, Federal Trade Comm’n, FTC Charges Deceptive Privacy Practices in Google’s Rollout of Its Buzz Social Network (Mar. 30, 2011), <http://ftc.gov/opa/2011/03/google.shtm> (“Google’s data practices in connection with its launch of Google Buzz were the subject of a complaint filed with the FTC by the Electronic Privacy Information Center shortly after the service was launched.”). The Commission found that Google “used deceptive tactics and violated its own privacy promises to consumers when it launched [Buzz].”

⁴ In the Matter of Facebook, Inc., (2009) (EPIC Complaint, Request for Investigation, Injunction, and Other Relief), <https://epic.org/privacy/inrefacebook/EPIC-FacebookComplaint.pdf> [hereinafter EPIC 2009 Facebook Complaint]; In the Matter of Facebook, Inc., (2010) (EPIC Supplemental Materials in Support of Pending Complaint and Request for Injunction, Request for Investigation and for Other Relief), https://epic.org/privacy/inrefacebook/EPIC_Facebook_Supp.pdf [hereinafter EPIC 2009 Facebook Supplement]; In the Matter of Facebook, Inc., (2010) (EPIC Complaint, Request for Investigation, Injunction, and Other Relief), https://epic.org/privacy/facebook/EPIC_FTC_FB_Complaint.pdf [hereinafter EPIC 2010 Facebook Complaint].

⁵ In the Matter of Awarenessstech.com, et al., (2008) (EPIC Complaint, Request for Investigation, Injunction, and Other Relief), https://epic.org/privacy/dv/spy_software.pdf.

⁶ FTC v. CyberSpy Software, LLC, No. 6:08-cv-1872-Orl-31GJK, 2009 WL 2386137 (M.D. Fla. July 31, 2009) (Order), available at <http://www.ftc.gov/sites/default/files/documents/cases/2010/06/100602cyberspystip.pdf>.

⁷ EPIC: Does AskEraser Really Erase?, <https://epic.org/privacy/ask/>

⁸ Contact Us, SAMSUNG, http://www.samsung.com/us/business/contact_us.html (last visited Feb. 10, 2015).

“Smart TVs” – home entertainment systems that respond to human voices and gestures.⁹

II. Factual Background

A. Congress Anticipated the Privacy Threats of “Interactive Television” In the Early 1980s.

4. Concerns about the use of televisions to collect consumer information were anticipated in the 1980s.¹⁰
5. Privacy concerns grew out of an awareness that televisions would enable a wide range of functions in the home, including “home banking, instant voting, storage of personal information, home shopping, instant-response study courses, automatic regulation of utility use, a selection from almost 1,000 data bases of specialized information, and security services which can monitor for fire, home intrusion and medical emergency.”¹¹
6. The initial deployment of occurred through the “set-top” boxes that delivered cable television to the consumer, and transmitted user data to the service provider.¹²
7. Privacy scholars and policy makers recognized the risk that interactive television would threaten the privacy of users if safeguards were not established.¹³
8. These risks included the “danger similar to wiretapping,” of “misuse and interception of ‘private’ information” during transmission to the central servers, as well as the insecurity of data once it arrived at the central servers.¹⁴
9. The Cable Communications Policy Act was enacted in 1984 to combat these risks.¹⁵

⁹ *Samsung Smart TV - TV Has Never Been This Smart*, SAMSUNG, <http://www.samsung.com/us/experience/smart-tv/> (last visited Feb. 10, 2015).

¹⁰ See William J. Broad, *U.S. Counts on Computer Edge in Race for Advanced TV*, N.Y. Times (Nov. 28, 1989), <http://www.nytimes.com/1989/11/28/science/us-counts-o-computer-edge-in-the-race-for-advanced-tv.html> (“Finally, scientists say, the advent of digital television will aid the merging of computers and television, with the prospect of a rush of combined uses.”).

¹¹ David A. Bode, *Interactive Cable Television: Privacy Legislation*, 19 Gonz. L. Rev. 725 (1984).

¹² See Rachel Powell, *Tech Notes: Televised Give and Take*, N.Y. Times (Apr. 25, 1993), <http://www.nytimes.com/1993/04/25/business/tech-notes-televised-give-and-take.html> (“Such capabilities require microprocessors atop the television set and high-capacity fiber-optic lines that link the TV with the cable company -- equipment that is far more sophisticated than the set-top converter boxes and copper cable widely used today. . .”).

¹³ See, e. g., David Flaherty, *Protecting Privacy in Two Way Electronic Services*, Communications Library (1985).

¹⁴ Bode, *supra* 13 at 711. See also *Cable Television Privacy Act: Protecting Privacy Interests from Emerging Cable TV Technology*, 35 Fed. Com. L.J. 71, 79 (1983).

10. The Act ensures that cable operators collect only the user data needed to operate the service, keep the data secure while it is in use, and delete the data once it has served its purpose. It also gives cable consumers the right of access to their data.¹⁶
11. According to the Senate Committee on Commerce, Science, and Transportation, “the development of new and diversified services over interactive two-way cable systems should not impact adversely upon the privacy of the individual.”¹⁷
12. The FTC Chair has recently addressed the specific problem of consumer devices that spy on consumers. Chair Ramirez stated, “Reasonable limits on data collection and data retention is the first line of defense for consumer privacy.”¹⁸

B. Samsung Sells TVs that Record Voice Communications in the United States

13. Beginning in 2012, some companies developed techniques to monitor and record voice communications..¹⁹
14. Samsung first announced such a television at the Consumer Electronic Expo in 2012.²⁰
15. Samsung’s “Smart Touch” remote control has a built-in microphone for voice recording; other models include a camera and additional microphones to record voice and hand gesture.²¹
16. As of 2013, Samsung had nearly a thirty percent share of the “Smart TV” market.²²

¹⁵ Cable Communications Policy Act of 1984, 47 U.S.C. §§ 601-639.

¹⁶ *Id.* at §631.

¹⁷ S.Rep. No. 67, 98th Cong., 1st Sess. 27 (1983).

¹⁸ [COMPLETE CITE] <http://www.usnews.com/news/articles/2015/01/06/the-internet-of-things-ftc-chairwoman-calls-for-tech-privacy-at-ces>

¹⁹ See Natasha Singer, *The Human Voice, as Game Changer*, N.Y. Times (Mar. 31, 2012), <http://www.nytimes.com/2012/04/01/technology/nuance-communications-wants-a-world-of-voice-recognition.html> (“Here, Mr. Sejnoha, the company’s chief technology officer, and other executives are plotting a voice-enabled future where human speech brings responses from not only smartphones and televisions, cars and computers, but also coffee makers, refrigerators, thermostats, alarm systems and other smart devices and appliances.”) -

²⁰ See Christina Bonnington, *Samsung Smart TV 2.0 Can ‘Listen, See and Do’*, Wired (Jan. 9, 2012), <http://www.wired.com/2012/01/samsung-smart-tvs-ultrabooks/> (“That means you’ll be able to toss your remote aside and control your TV using your voice or hand gestures, or perhaps a little help from your Android device. Cooler still, you’ll be able to log in to your television using facial recognition, and a service called Family Story will let you show photos, memos and videos from your mobile device.”).

²¹ See Casey Johnston, *Hands-on: Gesture, Voice, and the Many Inputs of Samsung’s Smart TV*, ArsTechnica (Mar. 6, 2012), <http://arstechnica.com/gadgets/2012/03/hands-on-gesture-voice-and-the-many-inputs-of-samsungs-smart-tv/>.

17. SmartTV sales reached more than 90 million worldwide in 2013, and is expected to grow to 228 million by 2018.²³ Other market forecasts estimate that Smart TV sales will reach 141 million in 2015.²⁴
18. Samsung has recently purchased LoopPay, a mobile payment processing software company.²⁵
19. With the purchase of LoopPay, Samsung announced its intent to compete in the mobile payment services market.²⁶

B. Samsung Routinely Intercepts and Records Private Conversations in the Home

20. When the voice recognition feature is enabled, everything a user says in front of the Samsung SmartTV is recorded and transmitted over the internet to a third party regardless of whether it is related to the provision of the service.²⁷
21. Under the heading “Voice Recognition” on the company’s Privacy Policy page, the company states:

To provide you the Voice Recognition feature, some voice commands may be transmitted (along with information about your device, including device identifiers) to a third-party service that converts speech to text or to the extent necessary to provide the Voice Recognition features to you. In addition, Samsung may collect and your device may capture voice commands and associated texts so that we can provide you with Voice Recognition features and evaluate and improve the features. *Please be aware that if your spoken words include personal or other sensitive information, that information will be among the data captured and transmitted to a third party through your use of Voice Recognition.*²⁸

²² See Alex Tretbar, *Samsung is Still King of (Smart) TV Sales, But Vizio Eyes the Throne from Second Place*, Digital Trends (Mar. 11, 2014), <http://www.digitaltrends.com/home-theater/samsung-and-vizio-ruled-tv-sales-last-year/>.

²³ *Smart TV Sales Skyrocket*, Broadband TV News (Nov. 7, 2014), <http://www.broadbandtvnews.com/2014/11/07/smart-tv-sales-skyrocket/>.

²⁴ See *Connected TV Sets: Global Sales Forecast 2011-2015*, Statista (2015), <http://www.statista.com/statistics/273674/sales-of-internet-connected-tv-sets-worldwide/>.

²⁵ Jonathan Cheng, *Samsung Makes Move Into Mobile Payments*, Wall Street Journal (Feb. 18, 2015), <http://www.wsj.com/articles/samsung-makes-move-into-mobile-payments-1424291445?mod=djemalertTECH>

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.* (emphasis added).

22. Samsung has identified the third party as Nuance, a voice-to-text recognition company.²⁹
23. Samsung attempts to disclaim liability for any third party data privacy or security practices, including Nuance's data privacy and security practices.³⁰
24. Under the heading "Third Parties," Samsung states:

Please note that when you watch a video or access applications or content provided by a third-party, that provider may collect or receive information about your SmartTV (e.g., its IP address and device identifiers), the requested transaction (e.g., your request to buy or rent the video), and your use of the application or service. Samsung is not responsible for these providers' privacy or security practices. You should exercise caution and review the privacy statements applicable to the third-party websites and services you use.³¹
25. Samsung has represented that it encrypts the voice communications it transmits to Nuance.³²
26. Samsung claims it, "takes consumer privacy very seriously and our products are designed with privacy in mind. We employ industry-standard security safeguards and practices, including data encryption, to secure consumers' personal information and prevent unauthorized collection or use."³³
27. However, a computer researcher determined that Samsung does not encrypt all the conversations it records and transmits to Nuance.³⁴
28. Samsung later conceded that the company does not encrypt all the voice recordings it transmits.³⁵
29. Samsung also admitted it has not deployed the software necessary to encrypt plaintext transmissions.³⁶

²⁹ Samsung Tomorrow, *Samsung Smart TVs Do Not Monitor Living Room Conversations* (Feb. 10, 2015), <http://global.samsungtomorrow.com/samsung-smart-tvs-do-not-monitor-living-room-conversations/>.

³⁰ *Samsung Global Privacy Policy*, *supra* at 23.

³¹ *Id.*

³² Samsung Tomorrow, *supra* at 26.

³³ *Id.*

³⁴ David Lodge, *Is Your Samsung TV Listening to You?*, Pen Test Partners Blog (Feb. 16, 2015), <https://www.pentestpartners.com/blog/is-your-samsung-tv-listening-to-you/>.

³⁵ Leo Kelion, *Samsung's smart TVs fail to encrypt voice commands*, BBC News (Feb. 18, 2015), <http://www.bbc.com/news/technology-31523497>

³⁶ *Id.* (Samsung stated, "Our latest Smart TV models are equipped with data encryption and a software update will soon be available for download on other models.")

C. Many Consumers Believed That Samsung's Voice Recognition Technique Did Not Involve Voice Recording or Transmission

30. EPIC has compiled many statements from consumers concerning Samsung's decision to intercept and record private communications in the home.
31. Upon learning that Samsung SmartTVs record and transmit conversations in the home, user Dane Jensen commented, "This is an outrageous invasion of privacy and should be illegal. Actually it is illegal but not being enforced. You are not allowed to spy or record someone without consent. I just bought a Samsung TV and never saw or signed any consent form to be recorded. I never saw anything."³⁷
32. User Stephen commented, "This should have to be relayed to the customer prior to purchasing. Shame on Samsung for giving into the governments constant strive to monitor the entire population"³⁸
33. User potrzebie commented, "I own two Samsung TVs and a Samsung tablet. If they don't stop this right now, I will never buy another Samsung product, ever. Vote with your wallets people."³⁹
34. Twitter user @Jason_Garber commented, "From now on wherever I have business meetings and there is a #Samsung #SmartTV present I will ask for its removal."⁴⁰
35. Twitter user @CSElder commented, "@Samsungtweets i will NEVER buy another Samsung tv thanks to your recording feature. You overstep your bounds. #SamsungFail"⁴¹
36. User beverly commented, "why is this info sent to third party at all it should just stop at the smart tv processor"⁴²
37. User cft6vgy7 commented, "This is why devices like cameras and microphones should always be sold separately from computers, TVs, and other electronics. It may not be as "convenient" for the less tech-savvy, but it will be more secure for

³⁷ David Goldman, *Your Samsung TV is Eavesdropping on Your Private Conversations*, CNN (Feb. 10, 2015) http://money.cnn.com/2015/02/09/technology/security/samsung-smart-tv-privacy/index.html?section=money_latest.

³⁸ Joshua Barrie, *Samsung's SmartTV Is 'Spying' on Your Personal Conversations*, Yahoo Tech (Feb. 9, 2015) <https://www.yahoo.com/tech/samsungs-smart-tv-is-spying-on-your-personal-110539170794.html>.

³⁹ See Alyssa Newcomb, *Samsung Privacy Policy: Watch What You Say Around Your Smart TV*, ABC News (Feb. 9, 2015) <http://abcnews.go.com/Technology/samsung-privacy-policy-watch-smart-tv/story?id=28829387>.

⁴⁰ Jason Garber, Twitter (Feb. 8, 2015) https://twitter.com/Jason_Garber/status/564392204358385664

⁴¹ Chris Elder, Twitter (Feb. 10, 2015) <https://twitter.com/CSElder/status/565164952214708225>

⁴² See Barrie, *supra* at 30.

every single consumer. Allow consumers to "opt-in" if they don't mind the security risk; don't force users to have to "opt-out" if they want to preserve their own privacy."⁴³

38. User John Manso wrote, "I'm glad this is getting national attention. When I first saw the smart TV's come out, very few were concerned. A device in your living room with a camera, a microphone, and 24 hour access to the internet. What could go wrong here? Uh, everything. Who knows who can hack into all of these with a simple piece of software. Everything can be "hacked". No we don't cook up national threats in our living room but privacy is expected and deserved in one's living room wouldn't you say?"⁴⁴

39. User Craig Cheatham commented:

There are a couple problems evident here beside the obvious one of spying on our conversations. All of these User Agreements convey all sorts of rights to the company without articulating them in a clear manner to the consumer.

My Sony TV would be neutered if I didn't agree to a laundry list of data harvesting. As far as I can tell, ALL of my media surfing is sent back to the mothership. Any pausing, muting, viewing cable, viewing any of the 300 media content apps the TV provides access to, any music, any devices connected to the TV, any games played on the tv. There is NO way to know what is "shared" or who has access to it. Pile on to that the fact of the huge Sony hack and loss of data. Any Agencies who buy this data could compile a dossier of my habits better than I think I know myself.

[...]

This trope of Future Shock is a new societal psychological syndrome, as yet unnamed. It is not really paranoia, it is a response to the unwilling sharing of our personal lives that we are powerless to stop without becoming a tree dwelling Luddite. It is an intrusion into what had been considered private personal space.⁴⁵

B. Many Consumers Believe Samsung's Practices Are Illegal Under Consumer Protection or Wiretap Laws

⁴³ See Hayley Tsukayama, *Samsung: Our televisions aren't secretly eavesdropping on you*, The Washington Post (Feb. 10, 2015) <http://www.washingtonpost.com/blogs/the-switch/wp/2015/02/10/samsung-our-televisions-arent-secretly-eavesdropping-on-you/>

⁴⁴ See Damon Beres, *How To Stop Your Smart TV From Eavesdropping On You*, Huffington Post (Feb. 9, 2015) http://www.huffingtonpost.com/2015/02/09/your-samsung-tv-is-spying-on-you_n_6647762.html

⁴⁵ See Shane Harris, *Your Samsung SmartTV Is Spying on You, Basically*, The Daily Beast (Feb. 5, 2015) <http://www.thedailybeast.com/articles/2015/02/05/your-samsung-smarttv-is-spying-on-you-basically.html>

40. User SGHILL commented, "The real question is: can Nuance (the "third party") be subpoenaed for logs of your home activities for a lawsuit. Given recent developments with phone and vehicle blackbox records, I'd say the answer is yes a subpoena will be upheld."⁴⁶

41. User @nordicgod commented, "sounds like phone tapping, which is a federal crime. Has the FCC arrested anyone at Samsung. Does Samsung have a federal judges permission?"⁴⁷

42. User Dan King posted:

If someone puts a camera in your abode and records your activities, verbal and physical it is a) voyeurism, b) invasion of privacy, c) (I would suggest) cyber stalking. Are the sellers of Samsung aware of the televisions capabilities? One could argue the sellers of Samsung TV's are selling spyware. I find this whole notion horrific. If we cannot discuss things in the privacy of our own home without being overheard we have truly reached the bottom of the chasm and big brother is here to stay!! I do not believe for a moment that Samsung is the only company doing this.⁴⁸

43. User velox commented, "Nuance Communications already has a corporate officer listed as the "Director of National Security Solutions". The person holding this title is a former(?) NSA officer and a former employee at the ODNI's office in DC."⁴⁹

44. User Roger P. commented, "this is how the Government is going to be tracking you, recording you, ect throught all these "wonderful" devices smart phones, smart t.v, GPS navigators even your car will be a grand listening agent.....its very possable and most likely probable"⁵⁰

45. User Mike Westkamper commented, "Its time to upgrade the bill of rights. 'No person or entity may collect, collate or disseminate and information about any other entity or person without informed consent.'. Violation of this clause shall carry monetary and confinement penalties suitable for any [d]amages caused."⁵¹

⁴⁶ See Tsukayama, *supra* at 35.

⁴⁷ See Eyder Peralta, *Samsung's Privacy Policy Warns Customers Their Smart TVs Are Listening*, NPR (Feb. 9, 2015) <http://www.npr.org/blogs/thetwo-way/2015/02/09/385001258/samsungs-privacy-policy-warns-customers-their-smart-tvs-are-listening>

⁴⁸ See Beres, *supra* at 38.

⁴⁹ See Tsukayama, *supra* at 35.

⁵⁰ See Barrie, *supra* at 30.

⁵¹ Javier E. David, *Shhh, not in front of the TV! Samsung may be eavesdropping on you*, Comment 1843692395, CNBC (Feb. 8, 2015) <http://www.cnbc.com/id/102407345#comment-1843692395>

46. Commenter A Yahoo Reader posted, "Sounds to me that some company is intentionally stepping on someone's privacy rights. It doesn't matter whether it's a big company or not. It shouldn't be allowed or LEGAL."⁵²
47. User Donald P. commented, "It's called 'bugging' and it's illegal. Period."
48. User JoesTalinTroLI commented, "A lawsuit should be filed immediately against Samsung. This is a clear violation of the 4th amendment."⁵³
49. User Gunny posted, "Are people really that damned lazy to key the remote??? This recording BS has to be against existing privacy laws. Hopefully a class action law suit will be filed by an Attorney General."⁵⁴
50. User Rich commented, "No smart tv for me. got enough cameras and listening devices all around don't need one in my house. Can you say invasion of privacy? Law suites coming."⁵⁵
51. User Mike Thorne Smallwood commented, "Time to pass legislation requiring that all smart devices must include manual hard switch interrupts not capable of electronic control that allow users to break radio, video and audio circuitry leads, effectively disabling any possibility of hacking the users system when the feature is manually switched to off."⁵⁶
52. User Allen Burnett commented:

Any competent hacker can turn on any camera or microphone on any connected device and see/hear whatever is in range. I'm sure the justice department is trying to acquire (or already has) this capability. I'm giving the whole "wired" society another 10 years before people begin revolting against it. They'll buy older non-GPS cars, remove batteries from cellphones when not being used, pay with cash only, and remove all wireless devices from within their homes and businesses. Too many people's lives are being ruined by having their identity/finances/personal information stolen. The problems with being "wired" will soon outweigh the benefits and people will return to paper currency, talking instead of texting, and encrypting whatever electronic devices they must use.⁵⁷

⁵² See Barrie, *supra* at 30.

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ See Natasha Lomas, *Today in Creepy Privacy Policies, Samsung's Eavesdropping TV*, Techcrunch (Feb. 8, 2015), <http://techcrunch.com/2015/02/08/telescreen/>.

⁵⁷ *Id.*

F. Privacy Experts Warn That Samsung’s “Always-On” Voice Recording Practice is Misleading to Consumers

53. EPIC has reviewed many statements by experts in law, technology, and business practices concerning Samsung’s decision to intercept and record private communications in the home

54. Technology journalist Natasha Lomas commented:

The creepy wording of Samsung’s SmartTV privacy policy only serves to pass the buck on risks — and fails to educate the user on how exactly the technology they have paid for works, opting to make them feel uneasy/urge them to self-censor instead. If this privacy policy pleases anyone, it’s only going to put smiles on the face of Samsung’s legal department. So while the content of the policy comes off as Orwellian, the processes here are more impenetrably Kafka-esque, with unseen layers and players (in the case of the VR in this TV the third party processor is apparently Nuance — which has its own privacy policy that TV users suddenly become subject to if they utilize the on-board voice recognition feature) involved in the processing of the user’s data, leaving the person who has actually paid for the device in the dark about what exactly is going on. As more consumer electronics devices are networked and augmented with cloud-services, far greater levels of transparency about data processing will be required from device makers — along with clearly signposted opt-outs and user-controls for cloud-processing — to avoid the people who actually pay for this stuff to end up viewing ‘smart’ as ‘suspicious’.⁵⁸

55. Emma Carr, director of privacy campaign group Big Brother Watch, commented:

Samsung needs to understand that not everyone wants to be spied on by their TV. It is outrageous that the company has even stated in its own privacy policy that if the TV’s owner does decide not to share their private information, then the company may still take the information anyway. This leaves users with no knowledge or control over where your information goes or who has access to it and that is simply unacceptable. Few people would expect a TV to intrude on our privacy, yet this is increasingly becoming the case. As this sort of technology is being made to gather increasing amounts of data about

⁵⁸ *Id.*

us, it is vitally important that people should have to choose to make use of these additional services.⁵⁹

56. Paul Levy, a senior researcher at the University of Brighton, commented:

Did you recently buy a Samsung smart TV? If you are worried about privacy, you may be wondering how smart that decision was following the manufacturer's warnings that its voice-activated televisions may record personal information – that is, your conversations – and transmit them to a third party. The voice-activated television monitors spoken conversations to listen for commands and transmits them to another firm which performs the voice analysis. Samsung stated that the televisions may even do so when the voice-activation feature is turned off. ... But it's endlessly apparent how firms that are evangelical about the need for user data to be accessible to them are nevertheless vague about how they then use it. Terms and conditions are long and bamboozling.⁶⁰

57. Ann Cavoukian, the former Ontario privacy commissioner and current executive director of the Privacy and Big Data Institute at Ryerson University, commented, "With Samsung, it's like all of sudden you have to monitor what you should say in your home — the last bastion of privacy, a place that's supposed to be sacrosanct. Are you kidding me?"⁶¹

G. Samsung is Violating the Subscriber Privacy Provision in the Cable Act

58. The Subscriber Privacy Provision in the Cable Communications Policy Act ("CCPA") prohibits the collection of "personally identifiable information concerning any subscriber without the prior written or electronic consent of the subscriber concerned."⁶²

59. The CCPA also provides, "a cable operator shall not disclose personally identifiable information concerning any subscriber without the prior written or electronic consent of the subscriber concerned and shall take such actions as are

⁵⁹ Alex Hern, *The Guardian Samsung Rejects Concern Over Orwellian Privacy Policy*, The Guardian (Feb. 9, 2015), <http://www.theguardian.com/technology/2015/feb/09/samsung-rejects-concern-over-orwellian-privacy-policy> (quoting the remarks of Emma Carr).

⁶⁰ Paul Levy, *Privacy is fast becoming the real disruptive force in digital technology*, The Conversation (Feb. 11, 2015) <http://theconversation.com/privacy-is-fast-becoming-the-real-disruptive-force-in-digital-technology-37244>.

⁶¹ Matt Kwong, *Samsung SmartTV an 'absurd' privacy intruder, Ann Cavoukian says*, CBC News (Feb. 10, 2015) <http://www.cbc.ca/news/technology/samsung-smarttv-an-absurd-privacy-intruder-ann-cavoukian-says-1.2950982>.

⁶² 47 U.S.C. § 631(b).

necessary to prevent unauthorized access to such information by a person other than the subscriber or cable operator.”⁶³

- 60. Samsung does not obtain written or electronic consent to recording the private conversations of people in their homes and transmitting those voice recordings to Nuance.
- 61. Samsung does not “take such actions as are necessary to prevent unauthorized access” to subscriber information.
- 62. In fact, Samsung deliberately overcollects information provided by cable subscribers, in contravention to Congress’ explicit purpose for passing the subscriber privacy section of the CCPA.
- 63. Samsung is violating the Cable Communications Policy Act.

H. Samsung’s Business Practices Violate the Electronic Communications Privacy Act

- 64. The Electronic Communications Privacy Act (“ECPA”) prohibits the “interception and disclosure of wire, oral, or electronic communications.”⁶⁴
- 65. The statute provides that any person who “intentionally intercepts, endeavors to intercept, or procures any other person to intercept or endeavor to intercept, any wire, oral, or electronic communication” or “intentionally discloses, or endeavors to disclose, to any other person the contents of any wire, oral, or electronic communication, knowing or having reason to know that the information was obtained through the interception of a wire, oral, or electronic communication in violation of this subsection,” violates the Act.
- 66. The statute’s definition of “person” includes “corporations.”⁶⁵
- 67. “Oral communications” include only those face-to-face conversations for which the speakers have a justifiable expectation of privacy.⁶⁶
- 68. “Wire communications” means “any aural transfer made in whole or in part through the use of facilities for the transmission of communications by the aid of wire, cable, or other like connection between the point of origin and the point of reception (including the use of such connection in a switching station) furnished

⁶³

⁶⁴ 18 U.S. § 2511(1) (2012). (This part of ECPA was originally enacted as Title III of the Omnibus Crime Control and Safe Streets Act of 1968, 18 U.S.C. 2510-2520 (1964 ed.)(Supp. IV)).

⁶⁵ 18 U.S.C. 2510(6).

⁶⁶ 18 U.S.C. 2510(2). *See also US v. Larios*, 593 F.3d 82, 92 (1st Cir. 2010).

or operated by any person engaged in providing or operating such facilities for the transmission of interstate or foreign communications or communications affecting interstate or foreign commerce.”⁶⁷

69. Under a few narrow exemptions, ECPA permits the interception of “oral communications” and “wire communications.”⁶⁸
70. No exception permits a company to surreptitiously record private communications in the home.
71. By intercepting and recording private communications in the home, Samsung is violating ECPA.

IV. Legal Analysis

A. The FTC’s Section 5 Authority

72. The FTC Act prohibits unfair and deceptive acts and practices, and empowers the Commission to enforce the Act’s prohibitions.⁶⁹ These powers are described in FTC Policy Statements on Deception⁷⁰ and Unfairness.⁷¹
73. A trade practice is unfair if it “causes or is likely to cause substantial injury to consumers which is not reasonably avoidable by consumers themselves and not outweighed by countervailing benefits to consumers or to competition.”⁷²
74. The injury must be “substantial.”⁷³ Typically, this involves monetary harm, but may also include “unwarranted health and safety risks.”⁷⁴ Emotional harm and other “more subjective types of harm” generally do not make a practice unfair.⁷⁵ Secondly, the injury “must not be outweighed by an offsetting consumer or

⁶⁷ 18 U.S.C. 2510(1).

⁶⁸ 18 U.S.C. 2511(1).

⁶⁹ See 15 U.S.C. § 45 (2010).

⁷⁰ Fed. Trade Comm’n, FTC Policy Statement on Deception (1983), available at <http://www.ftc.gov/bcp/policystmt/ad-decept.htm> [hereinafter FTC Deception Policy].

⁷¹ Fed. Trade Comm’n, FTC Policy Statement on Unfairness (1980), available at <http://www.ftc.gov/bcp/policystmt/ad-unfair.htm> [hereinafter FTC Unfairness Policy].

⁷² 15 U.S.C. § 45(n); see, e.g., *Fed. Trade Comm’n v. Seismic Entertainment Productions, Inc.*, Civ. No. 1:04-CV- 00377 (Nov. 21, 2006) (finding that unauthorized changes to users’ computers that affected the functionality of the computers as a result of Seismic’s anti-spyware software constituted a “substantial injury without countervailing benefits.”).

⁷³ FTC Unfairness Policy, *supra*.

⁷⁴ *Id.*; see, e.g., *Fed. Trade Comm’n v. Information Search, Inc.*, Civ. No. 1:06-cv-01099 (Mar. 9, 2007) (“The invasion of privacy and security resulting from obtaining and selling confidential customer phone records without the consumers’ authorization causes substantial harm to consumers and the public, including, but not limited to, endangering the health and safety of consumers.”).

⁷⁵ FTC Unfairness Policy, *supra*.

competitive benefit that the sales practice also produces.”⁷⁶ Thus the FTC will not find a practice unfair “unless it is injurious in its net effects.”⁷⁷ Finally, “the injury must be one which consumers could not reasonably have avoided.”⁷⁸ This factor is an effort to ensure that consumer decision making still governs the market by limiting the FTC to act in situations where seller behavior “unreasonably creates or takes advantage of an obstacle to the free exercise of consumer decisionmaking.”⁷⁹ Sellers may not withhold from consumers important price or performance information, engage in coercion, or unduly influence highly susceptible classes of consumers.⁸⁰

75. An act or practice is deceptive if it involves a representation, omission, or practice that is likely to mislead the consumer acting reasonably under the circumstances, to the consumer’s detriment.”⁸¹

76. There are three elements to a deception claim. First, there must be a representation, omission, or practice that is likely to mislead the consumer.⁸² The relevant inquiry for this factor is not whether the act or practice actually misled the consumer, but rather whether it is likely to mislead.⁸³

77. Second, the act or practice must be considered from the perspective of a reasonable consumer.⁸⁴ “The test is whether the consumer’s interpretation or reaction is reasonable.”⁸⁵ The FTC will look at the totality of the act or practice and ask questions such as “how clear is the representation? How conspicuous is any qualifying information? How important is the omitted information? Do other sources for the omitted information exist? How familiar is the public with the product or service?”⁸⁶

78. Finally, the representation, omission, or practice must be material.⁸⁷ Essentially, the information must be important to consumers. The relevant question is whether consumers would have chosen another product if the deception had not occurred.⁸⁸ Express claims will be presumed material.⁸⁹ Materiality is presumed

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ FTC Deception Policy, *supra*.

⁸² FTC Deception Policy, *supra*; *see, e.g., Fed Trade Comm’n v. Pantron I Corp.*, 33 F.3d 1088 (9th Cir. 1994) (holding that Pantron’s representation to consumers that a product was effective at reducing hair loss was materially misleading, because according to studies, the success of the product could only be attributed to a placebo effect, rather than on scientific grounds).

⁸³ FTC Deception Policy, *supra*.

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.*

⁸⁸ *Id.*

for claims and omissions involving “health, safety, or other areas with which the reasonable consumer would be concerned.”⁹⁰

79. The FTC presumes that an omission is material where “the seller knew, or should have known, that an ordinary consumer would need omitted information to evaluate the product or service, or that the claim was false . . . because the manufacturer intended the information or omission to have an effect.”⁹¹
80. The Commission has previously found that a company may not repurpose user data for a use other than the one for which the user’s data was collected without first obtaining the user’s “express affirmative consent.”⁹²

B. The FTC’s COPPA Authority

81. The Children’s Online Privacy Protection Act (“COPPA”) regulates the collection of their children’s personal information by operators of online services.⁹³
82. The Rule, enforced by the FTC, applies to operators of online services, websites, and apps directed to children under 13 as well as operators of online services, websites and apps serving a general audience.⁹⁴
83. Operators of online services directed to children under 13 must comply with COPPA’s requirements.⁹⁵
84. Online service operators with general audiences must comply with COPPA when the operator “has actual knowledge that it is collecting or maintaining personal information from a child.”⁹⁶
85. To comply with COPPA, operators must obtain parental consent before collecting children’s personal information and data.⁹⁷
86. Chiefly, operators must: “(a) Provide notice on the website or online service of what information it collects from children, how it uses such information, and its disclosure practices for such information; (b) Obtain verifiable parental consent

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Cliffdale Associates, Inc.*, 103 F.T.C. 110, 110 (1984).

⁹² *In the Matter of Google, Inc.*; FTC File No. 102 3136 (Oct. 13, 2011) (Decision and Order), <http://www.ftc.gov/sites/default/files/documents/cases/2011/10/111024googlebuzzdo.pdf>.

⁹³ Federal Trade Commission, *Complying with COPPA: Frequently Asked Questions*, [http://www.ftc.gov/tips-advice/business-center/guidance/complying-coppa-frequently-asked-questions#General Questions](http://www.ftc.gov/tips-advice/business-center/guidance/complying-coppa-frequently-asked-questions#General%20Questions) (last visited Feb. 11, 2015).

⁹⁴ Children’s Online Privacy Protection Act, 16 C.F.R. § 312.3 (2013).

⁹⁵ *Id.*

⁹⁶ *Id.*

⁹⁷ *Id.*

prior to any collection, use, and/or disclosure of personal information from children; (c) Provide a reasonable means for a parent to review the personal information collected from a child and to refuse to permit its further use or maintenance . . . ”⁹⁸

87. Samsung’s supplemental SmartTV privacy policy briefly addresses children’s privacy: “SmartTV services may make available educational videos and other content appropriate for children, but we do not knowingly collect any personal information from children under the age of thirteen (13) without parental consent, unless permitted by law. If we learn that a child under the age of thirteen (13) has provided us with personal information, we will delete it in accordance with applicable law.”⁹⁹
88. Samsung represents that it complies with the requirements of COPPA because it is an online services operator with a general audience and has no “actual knowledge” of any personal information being collected.
89. Samsung specifically targets some features of the SmartTV to young children. The Hopster Smart TV App “brings preschoolers an extensive catalogue of hundreds of episodes of award-winning TV shows.”¹⁰⁰
90. Samsung has acknowledged that SmartTVs are commonly purchased by families with children under the age of 13.¹⁰¹
91. Samsung encourages parents to have their children interact with Samsung’s Smart TV.¹⁰²
92. Samsung routinely collects the private communications of young children.

C. Count I: Deceptive Failure to Disclose that Samsung Records and Transmits Private Conversations Through Its SmartTV

93. As described in detail above, users were not typically aware that Samsung SmartTVs would record and transmit over the internet their private conversations.

⁹⁸ *Id.*

⁹⁹ Samsung, Samsung Global Privacy Policy – SmartTV Supplement, <https://www.samsung.com/uk/info/privacy-SmartTV.html?CID=AFL-hq-mul-0813-11000170> (last visited Feb. 11, 2015).

¹⁰⁰ Samsung, *Samsung Partners with Hopster to Bring TV and Learning Platform for Children to Smart TV* (Dec. 10, 2014), <http://www.samsung.com/uk/news/local/samsung-partners-with-hopster-to-bring-tv-and-learning-platform-for-children-to-smart-tv>.

¹⁰¹ *Id.* (“The addition of Hopster to the Samsung Smart Hub means that families can now enjoy even more great content together at home”).

¹⁰² *Id.* (“[R]ecent research show[s] that 71% of parents agree that digital devices and screens allow children to explore and discover new things”).

94. As described above, users believe that it is illegal for Samsung to record and transmit over the internet their private conversations.
95. As described above, users are so outraged by Samsung's recording and transmission practices that they are calling for class action lawsuits.
96. As described above, Samsung attempted to calm consumers by assuring them that all recorded transmissions met with data encryption standards.
97. As described above, Samsung in fact transmitted some voice recordings unencrypted, in plaintext.
98. Therefore, Samsung's failure to adequately disclose that this commitment to privacy was subject to reversal constitutes a deceptive act or practice in violation of Section 5(a) of the FTC Act, 15 U.S.C. § 45(a).
99. Users could not reasonably avoid being aware of the inadequate disclosures regarding Samsung's practice of recording and transmitting private conversations over the internet.
100. Users could not reasonably avoid being aware of Samsung's failure to encrypt all recorded voice transmissions.
101. The inadequate disclosures are not outweighed by countervailing benefits to consumers or to competition.
102. Samsung's inadequate disclosures constitute deceptive acts or practices in violation of Section 5 of the FTC Act, 15 U.S.C. § 45(a).

D. Count II: Unfair Disclaimer of Liability for Third-Party Data Privacy and Security Practices

103. As described above, Samsung attempts to disclaim liability for the data privacy and security practices of companies to whom it transfers user data it has acquired from consumers.
104. As described above, Samsung transmits the private conversations of SmartTV users to a third-party company.
105. As described above, Samsung's privacy policy did not reveal to consumers the name of the third-party company performing the voice-to-text service.

106. As described above, Samsung proceeded to mislead consumers about their use of encryption to transmit recorded conversations.
107. By failing to take responsibility for the privacy and safety of users' recorded conversations, Samsung "unreasonably creates or takes advantage of an obstacle to the free exercise of consumer decisionmaking."
108. Specifically, Samsung users could not reasonably have anticipated that by using a voice-controlled SmartTV, their private conversations would be transmitted, sometimes unencrypted, to a third party company.
109. The inadequate protections are not outweighed by countervailing benefits to consumers or to competition.
110. Therefore, Samsung's inadequate disclosures constitute unfair acts or practices in violation of Section 5 of the FTC Act, 15 U.S.C. § 45(n).

E. Count III: Violation of Children's Online Privacy Protection Act

111. As described above, Samsung concedes that it markets its SmartTVs to children under the age of 13.
112. As described above, Samsung routinely records conversation in the home, including children's voices, and transmits these conversations to a third party.
113. By failing to ask parents permission to record, store, and transmit children's voices to a third party, Samsung fails to "[p]rovide a reasonable means for a parent to review the personal information collected from a child and to refuse to permit its further use or maintenance."
114. Parents cannot reasonably review the personal information that Samsung collects from children in the course of recording users' private conversations in the home.
115. Therefore, Samsung's failure to obtain parental consent for the collection and transmission of children's voices constitutes a violation of COPPA, 16 C.F.R. § 312.3 (2013).

V. Prayer for Investigation and Relief

1. EPIC urges the Commission to investigate Samsung, Inc., and enjoin its unfair and deceptive voice collection and transmission practices.
2. Specifically, EPIC requests the Commission to:

- a. Initiate an investigation of Samsung's voice recording and transmission practices;
- b. Halt Samsung's interception and recording of private communications in the home;
- c. Halt Samsung's practice of transmitting recorded communications to a third-party;
- d. Investigate Samsung's violation of the Electronic Communications Privacy Act;
- e. Investigate other companies engaged in similar practices, and
- f. Provide such other relief as the Commission finds necessary and appropriate.

Respectfully Submitted,

/s/

Marc Rotenberg,
EPIC Executive Director

/s/

Julia Horwitz, Director,
EPIC Consumer Privacy Project

/s/

Brooke Olausen
EPIC Consumer Protection Fellow

Electronic Privacy Information Center
1718 Connecticut Ave. NW Suite 200
Washington, DC 20009
202-483-1140 (tel)
202-483-1248 (fax)